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Chapter 8 - Environmental Analysis of the Exeland - Tripoli - Weston Routes - Existing Conditions and Potential Impacts

Physical Overview of the Sector

Geography

Topography-Tripoli 1, 2, 3, and 4

All of the Tripoli routes are located in the Northern Highland area. This area was once (600 to 700 million years ago) as mountainous as the Alps. These peaks were gradually worn down until nothing remained but a peneplain, a low undulating plain with occasional hills. The Northern Highland is one of the few places where these old mountain remnants are near the surface. The majority of the Northern Highland region is a smooth upland where few rocks punctuate the surface. An indication of the flat nature of the topography is the straight lines of the railroad corridors. This straight course is made possible by the low relief of the peneplain. The land generally slopes to the south, but usually no more than 4 to 5 feet per mile.

The Northern Highland also contains several types of ridges. The most visible are the monadnocks, which consist of rock of superior hardness or resistance to erosion. There are several well-known monadnock ridges. Rib Mountain, located north of the Weston terminus of the routes, is one of them.

The Northern Highland covers a large portion of northern Wisconsin and contains the areas of highest elevation in the state. This region, on the whole, has been profoundly affected by the glacial occupation. The soil, in general, is stony and sandy. This results in vast areas that are better suited to forest than crop production. This is especially true because of the numerous large swampy areas. The lakes are a steady source of water for the rivers that flow from this highest part of the state, as well as an attraction to fishermen and summer visitors. The rivers,

which were important waterways for the ancient and recent native peoples and the early white explorers, are still important to the tourist trade.

Geology-Tripoli 1, 2, 3, and 4

Some of the oldest rock in the world is near the surface in northern Wisconsin. This bedrock is part of the “shield” rock of the North American landmass. Each present continent contains at least one such core or shield that appears near the surface over wide areas. These shields were so named because they tend to bulge up toward the center like a medieval battle shield. The shield in North America is often called the Canadian Shield because it covers the eastern two-thirds of Canada. It also extends into the northern third of Wisconsin. This shield was formed during the early genesis of the earth up to about 600 million years ago. The Lake Superior Lowland and the Northern Highland Province cover the portion of the shield in Wisconsin.

The Arrowhead-Weston project is located, almost entirely, on this high part of the shield in northern Wisconsin. The down sloping edge of this ancient rock shield also lies under the southern two-thirds of Wisconsin but is buried under hundreds of feet of younger rocks. These younger rocks form the bedrock of southern Wisconsin. The depth of the shield rock in southern Wisconsin is evident in many places. Some river valleys in southern Wisconsin have been cut deep enough to expose the shield; in some locations it has been encountered during well borings, and the summit of some hills in the Baraboo Hills region show the shield rock emerging through the covering of younger rock. Central Marathon County, where the project terminates, is part of the Driftless Area.

Over time, wind, rain, and rivers smoothed the surface of the shield in northern Wisconsin. Then, for 200 million years, vast inland seas deposited sediments in overlapping layers as they retreated and advanced several times. Almost all of the sediments deposited in northern Wisconsin were subsequently weathered away, exposing the shield bedrock again. During the last 2 to 3 million years northern Wisconsin was assaulted with glaciers that knocked down forests, erased rivers, and scraped and ground up the surface of the land. After four separate advances of glaciers, over thousands of years, the ice melted back, pouring out floods of melt water, dumping its waste rock over the terrain and leaving the barren land to restore itself. The ice left its mark in northern Wisconsin, so vividly and in so many ways, that this state is renowned as a repository of glacial features and is a textbook of glacial history. As a result of all this more recent geologic activity in northern Wisconsin, the bedrock is generally covered by varying depths of glacial deposits.

Important geologic formations of varying age at many places in the state have been described. Because of the significance of these formations and what they have revealed and continue to reveal through geologic research, these formations need to be preserved. Of the formations described, none would be affected by the proposed routes in the Tripoli sector.

The Tripoli 1 Route crosses land located southwest of Prentice known to contain copper ore deposits. There may also be other deposits of metallic ores located along the Tripoli routes.

Soils-Tripoli 1, 2, 3, and 4

Origins and Associations

Most of the land affected by the proposed project is located in the Northern Highland geological province of Wisconsin. Glaciers in this region have stripped sediments from the area and deposited glacial till over the hard rock that was resistant to glaciation. Soils here tend to be stonier and more sandy than those in the rest of the state and there are large areas of wetlands. There is little lime in the glacial drift of the Northern Highland, so the water from wells and springs is predominantly soft. Glaciers did not cover the central and south-central parts of Marathon County; these areas are part of the Driftless Region.

Sawyer County:²¹² In Sawyer County, the Tripoli routes are mainly on silts or silt loams. These soils are primarily included in two soil associations. The Santiago-Freer-Freeon-Amery association has nearly level to moderately steep soils on glacial till plains and uplands. These soils formed in 15 to 36 inches of silt (loess) over a firm, reddish-brown sandy loam to loam glacial till. The Antigo-Brill-Stambaugh association has nearly level to gently sloping soils on glacial outwash plains and stream terraces. These soils formed in 20 to 40 inches of silty material over loose sands and gravel. Prime farmland soils are more concentrated in the southern portion of the county.

Rusk County:²¹³ Most of the soils in Rusk County that could be affected by the proposed project are forested silty soils. The towns of Marshall and Murry appear to have the highest concentration of prime farmland of any of the towns in the county that could be affected by the proposed project. Segments 135, 141, 155a, 155b, and 147 (parts of the Tripoli 1 and 2 Routes) appear to affect the least farmland.

Price County:²¹⁴ The soils that could be affected in Price County are generally forest soils that formed in silty, windblown deposits over dense sandy loam to loam glacial till. The highest

²¹² *Sawyer County Farmland Preservation Plan*, Sawyer County Zoning Committee, Northwest Regional Planning Commission, May, 1982, pp. 12-14; Sawyer County Conservation Department; Sawyer County University Extension; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March, 1996.

²¹³ Rusk County USDA Natural Resources Conservation Service; Rusk County USDA Farm Service Agency; *Soil Regions of Wisconsin, Map*, Wisconsin Geological and Natural History Survey, 1993; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March 1996.

²¹⁴ Price County University Extension and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March 1996.

concentration of prime farmland is found in the very southwestern portion of the county. One of the more common soil series present along the potential routes is Magnor silt loam.

Lincoln County:²¹⁵ In Lincoln County the routes pass through a number of different soil associations. The Vilas-Croswell-Markey soil association is found over the greatest portion of the project area. The Tripoli routes also cross many miles of soils of the Magnor association. Many areas of these soils are used as croplands

Taylor County:²¹⁶ The soils present along the routes in Taylor County include Magnor silt loam, Freeon, Almina, Sconsin, Maplehurst, and Newood soils. Prime farmland tends to be concentrated in the silty soils of the northwest and southeast areas of the county with less productive loamy soils concentrated in a band from the southwest to the northeast part of the county.

Marathon County:²¹⁷ All of the potential routes in Marathon County begin at the Weston Substation and pass through a number of different soil types north and west of the substation. The Withee-Marshfield and Magnor-Cable associations are deep, nearly level to gently sloping soils that are somewhat poorly drained to poorly drained. Both are silty soils, although the Magnor-Cable association is somewhat stonier. Many of the better-drained areas of these soils are used as croplands, while wetter areas are wooded or used as unimproved pasture. The eight miles of Marathon-Mylrea-Moberg soils are well drained to somewhat excessively drained stony, gravelly, and silty soils. This association is found on uplands and ground moraines, and sandy or loamy glacial till. The Cathro-Seelyeville soil association is present along the routes in depressions, ground moraines, and in glacial lake plains or outwash plains. These organic soils are mucky throughout or are mucky in the upper part and underlain by silty or loamy deposits. This association is limited by ponding and is generally unsuited to cultivated crops.

Much of the farmland in western Marathon County is prime and each of the potential routes appears to affect roughly the same amount of prime farmland in the county.

Vegetative cover – Tripoli 1, 2, 3, and 4

East of Exeland to Tripoli and south to the Marathon County line, the Tripoli Sector is largely forested with numerous wetlands in low-lying depressions. There are many large relatively unbroken tracts of forest consisting of aspen and northern hardwoods, including oak and maple,

²¹⁵ *General Soil Map, Lincoln County, Wisconsin*, USDA Natural Resources Conservation Service, Research Division of the College of Agriculture and Life Sciences, University of Wisconsin, 1993.

²¹⁶ Taylor County Service Center; *Soil Regions of Wisconsin, Map*, Wisconsin Geological and Natural History Survey, 1993; and *Potential Prime Farmland in Wisconsin, Map*, USDA Natural Resources Conservation Service, March, 1996.

²¹⁷ *Soil Survey of Marathon County*, USDA Soil Conservation Service in cooperation with the Research Division of the College of Agricultural and Life Sciences, University of Wisconsin, September 1989, pp 7-17.

especially in western Lincoln County. Many of the wetland areas in the vicinity of USH 8 support northern sedge meadow, alder thickets, and tamarack/spruce swamps.

In Marathon County, the forests give way to agriculture, specifically dairy operations with large areas in hay, corn, and alfalfa. Scattered ginseng gardens are also found between Athens and Weston. Approaching the Weston Power Plant, at the eastern terminus of the routes, lies the Nine Mile Forest unit of the Marathon County Forest (Nine Mile Forest). This section of county forestlands contains a variety of forest types, including large stands of aspen, northern hardwoods, scattered conifers, and some pine plantations.

Tripoli 1 Route

Detailed description

The Tripoli 1 Route is approximately 131 miles long. Figures 8-1 to 8-4 show the route from north to south. The route begins west of Exeland, in Sawyer County, at an existing 69 kV transmission line. The route follows the transmission line south for about three miles. It then extends southeast, following the Lakehead petroleum pipeline for about 4.5 miles. This section of the route crosses Big Weirgor Creek, Buff Creek, STH 40, and the Chippewa River.

After crossing the Chippewa River, the route proceeds east, cross-country, about 12 miles to a crossing of the Flambeau River just south of the Big Falls dam. This section of route crosses Bear Creek, CTH J, the Little Thornapple River, STH 27, Skunk Creek, the Thornapple River, CTH J, and Crooked Creek. East of the Flambeau River the route follows an existing NSP 115 kV line east for about four miles, crossing CTH X, CTH B, and Deer Tail Creek. The new 345 kV line would be double circuited with this line. The route then diverges from the existing 115 kV line, heading northeast for about a mile and then proceeding east, cross-country, for about 25 miles, to a point about two miles northwest of Prentice, where the route turns and continues south for three miles (paralleling a short length of road and double circuiting a short length of NSP 69 kV transmission line) before turning east once again. (The applicants propose to relocate the existing NSP 115 kV line and double circuit it with the new line on this portion of the route.) CTH B, CTH M, the Rusk-Price County line, CTH J, STH 111, the North and South Forks of the Jump River, USH 8, and many small creeks would be crossed by the new double circuit line as it passes through this area.

The route continues eastward about 14 miles, cross-country, to the Lincoln County line. Two possible locations for the proposed Tripoli Substation (Sites 1 and 2) are near the county line. Another two proposed locations for the substation (Sites 8 and 9) are located on this section of route, about four miles west of the Price-Lincoln County line. STH 13, Douglas Creek, CTH C, CTH D, and Squaw Creek are crossed by this route section. Just east of the county line, the route turns south.

The route extends south, cross-country, about 45 miles through Lincoln County and into Marathon County. The initial 0.75 mile passes another proposed Tripoli Substation site (Site 1) and could be double circuited with the proposed 115 kV line to Rhinelander, depending upon

which route is selected for the 115 kV line. In Lincoln County the route would parallel Tower Road for about three miles. The route crosses Squaw Creek, Ritchie Creek, STH 86, the North Fork Spirit River, Marheime Creek, Spirit River, New Wood Creek, CTH M, and STH 64. Just north of STH 64, the route turns and proceeds southeast about nine miles before turning and heading south once again. In Marathon County the route crosses CTH F, McGinnis Creek, Grass Creek, CTH S, Einert Creek, the Big Rib River, CTH U, STH 29, Scotch Creek, Soda Creek, and CTH N.

About three miles southeast of Edgar the Tripoli 1 Route turns east, proceeding east about eight miles, crossing CTH S, STH 107, CTH B, Fourmile Creek, and CTH O. A half-mile east of CTH O the route turns south for about two miles, again crossing Fourmile Creek. The route then turns east and proceeds about a mile before angling to the southeast to Spring Brook Road and a petroleum pipeline. The route parallels these facilities for one mile until it joins an existing WPSC 345 kV transmission line corridor. The new line would be double circuited with the existing 345 kV line to the Weston Substation. Along the way, the 345/345 kV line would cross Black Creek, CTH KK, and the Wisconsin River.

The NSP 115 kV line that the applicants propose to relocate provides local load service to two substations between the Flambeau River and Prentice. If this line is moved to a corridor further north with the new 345 kV line, two 115 kV connections would be needed to tie the 115 kV line into the substations to maintain the local load serving support provided by the line. The first connection would extend from a point on the route north of Catawba, south along the west side of Woodlawn Road for approximately 3,500 feet. It ends at the Catawba Substation located near the intersection of Woodlawn Road and Oak Ridge Avenue. The second connection would extend south approximately 4,500 feet, from a point on the route north of Hawkins, along the east side of CTH M to the existing 115 kV line which connects to the existing Hawkins Substation.

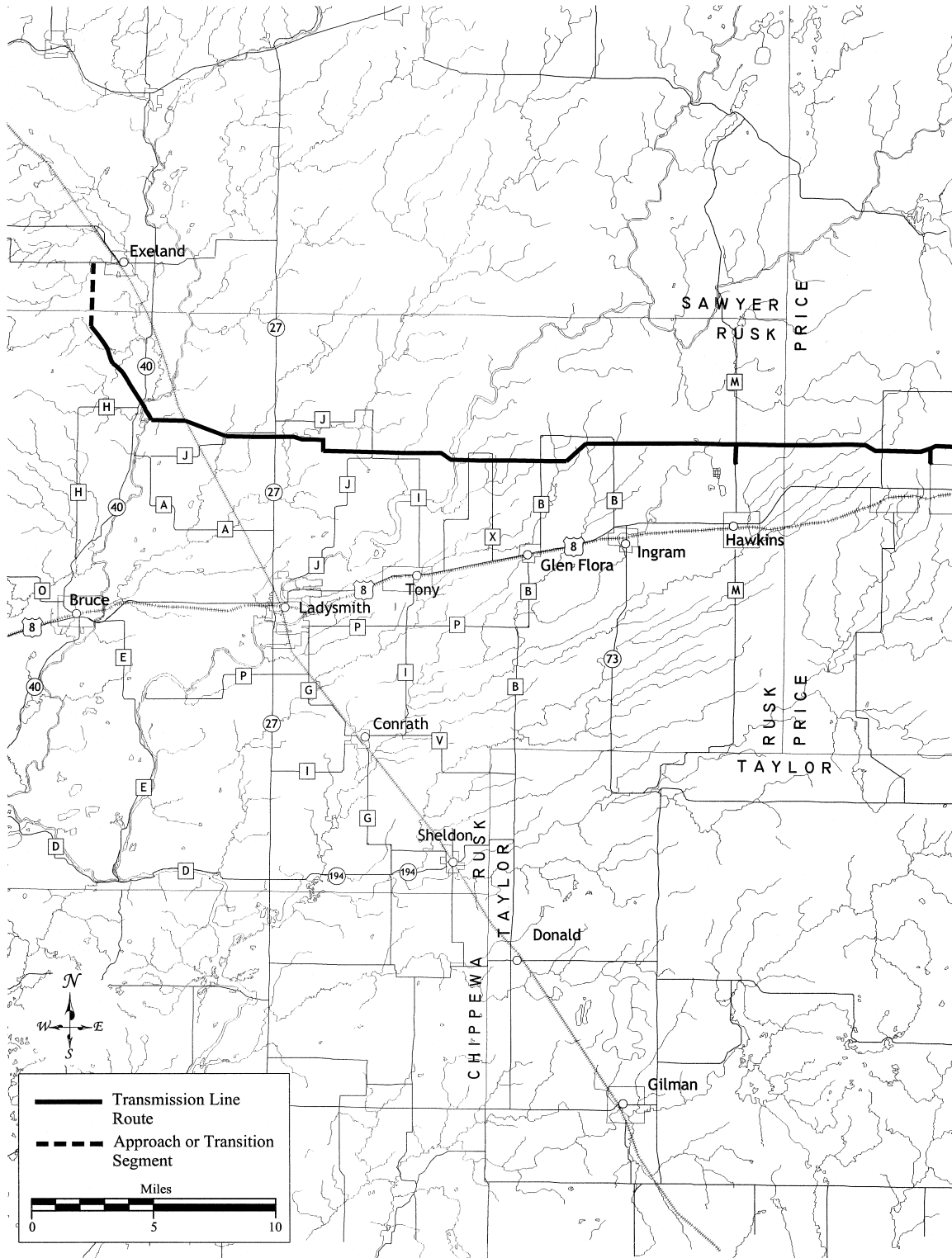
Figure 8-1 Tripoli 1 Route (1 of 4)

Figure 8-2 Tripoli 1 Route (2 of 4)

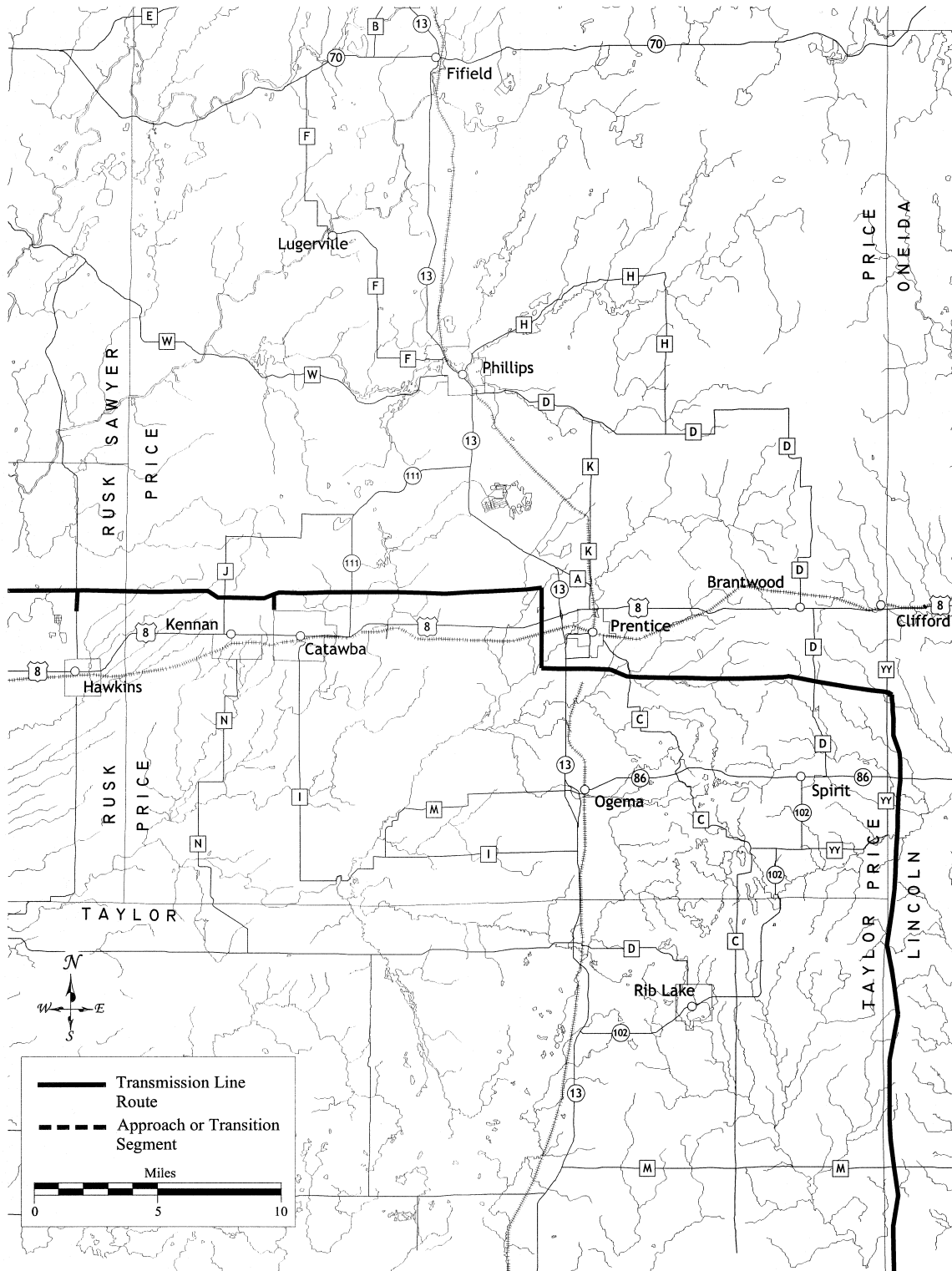


Figure 8-3 Tripoli 1 Route (3 of 4)

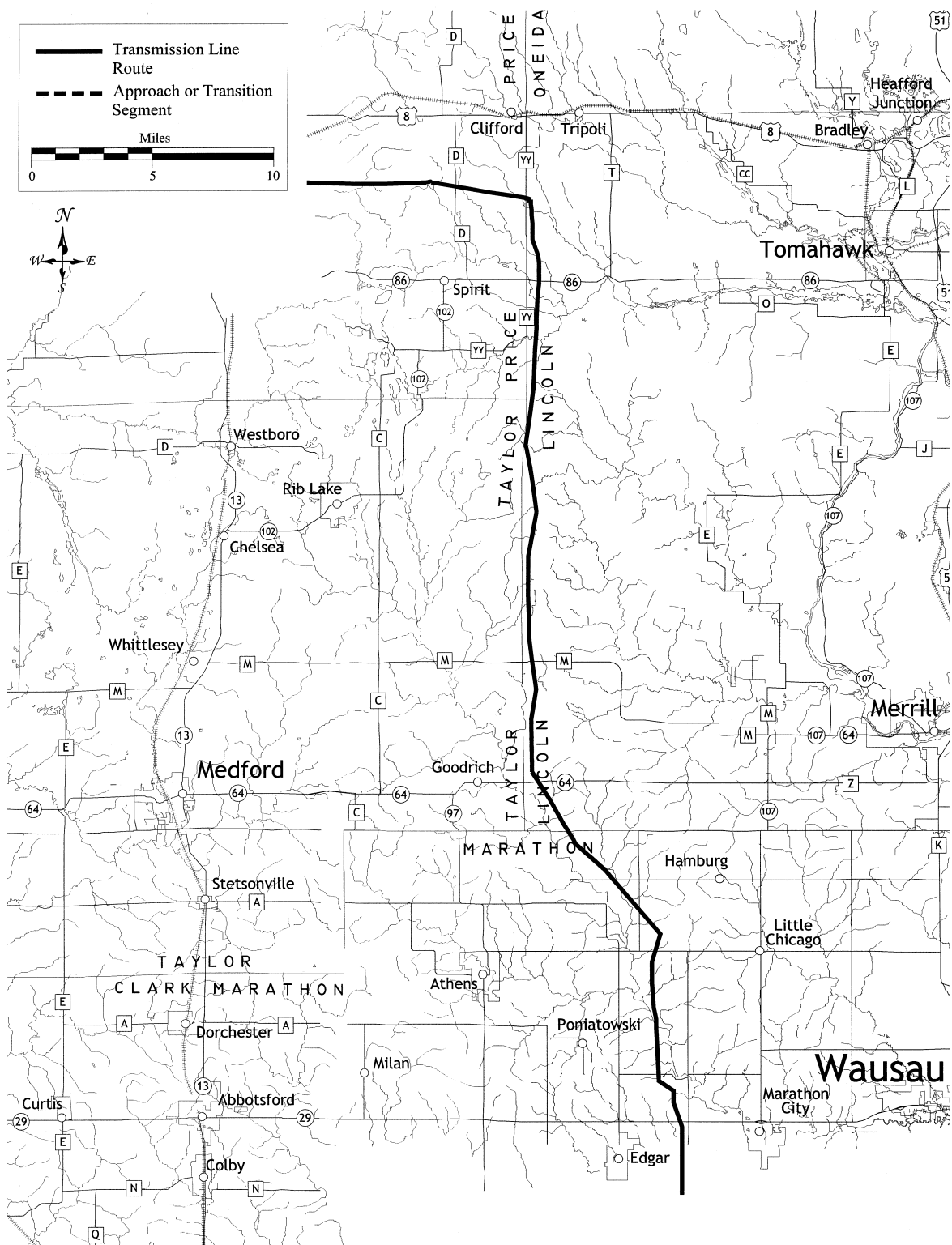
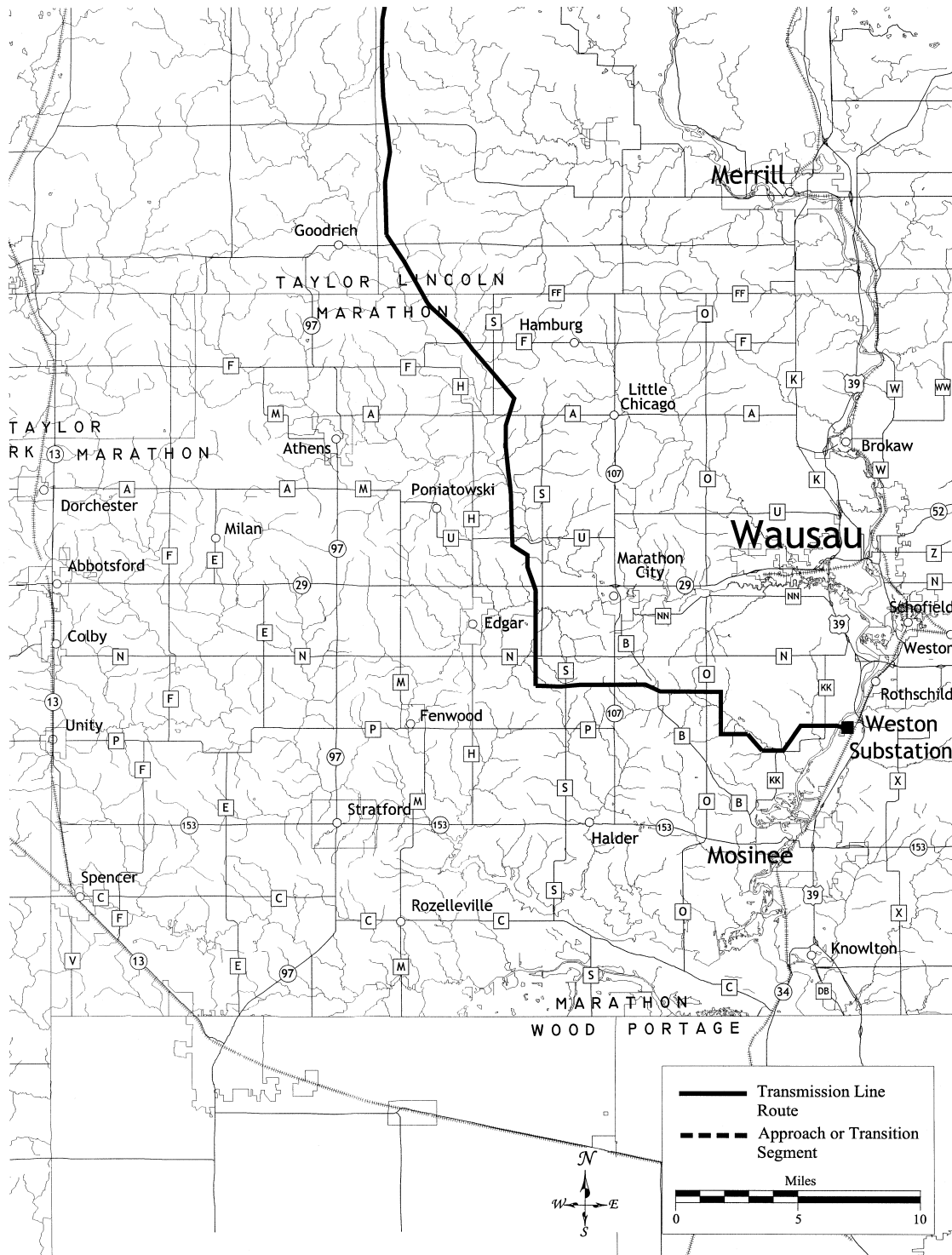


Figure 8-4 Tripoli 1 Route (4 of 4)

Natural resources

Lakes

There are no lakes over 20 acres in size within 1,000 feet of the Tripoli 1 Route.

Rivers and streams

There are 61 river/stream crossings on the Tripoli 1 Route. Eleven of the crossings are over waterways that have been designated as either OERW²¹⁸ and 23 of the crossings are over waterways classified as trout streams by the DNR. Forty-eight of the crossings appear to be inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the proposed transmission line, but they are not included in this analysis.

Table 8-1 indicates which streams along the Tripoli 1 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout depends on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the stream habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

The following section describes specific river and stream crossings affected by the Tripoli 1 Route and the potential impacts of constructing the line in these areas.

Chippewa River

The Tripoli 1 Route (segment 303) crosses the Chippewa River about 700 feet north of an existing petroleum pipeline crossing. A farmstead is located along the river, an equal distance north of the proposed crossing. The river banks are wooded at this location, resulting in the need to clear a new 120-foot wide ROW corridor. The transmission line would alter the existing visual setting at the crossing. Boaters would be the principal group impacted.

²¹⁸ The DNR maintains a list of outstanding and exceptional resource waters of the state. Outstanding Resource Waters (ORW) include all national and state wild and scenic rivers. ORW are defined as a lake or stream having excellent water quality, high recreational and aesthetic value, high quality fishing and free from point source or non-point source pollution. Exceptional Resource Waters (ERW) are similar to ORW in terms of water quality, recreational and aesthetic value and wildlife habitat but may be susceptible to future point source pollution. Both Outstanding and Exceptional Resource Waters (OERW) provide unique environmental settings that have not been significantly affected by human activities. The designated streams are identified in the state administrative code.

Flambeau River

A canoe portage is located at NSP's Big Falls Dam on the Flambeau River. Two existing electric transmission lines cross the river just south of the dam. The proposed route (segment 144) crosses the river about 800 feet south of the existing transmission line crossings. The riverbank is steeply sloped and wooded at the proposed crossing. ROW clearing and line construction on or near the steep slopes could lead to soil erosion. Maintaining the existing vegetation on the slopes and revegetating the area at the top of the slope could help to minimize potential erosion. This crossing would be visible to canoeists on the Flambeau River traveling south of the dam. The visual impact could be reduced if the crossing were moved further north to lie directly adjacent to the existing transmission line crossings.

Wisconsin River

Segment 1a, of the Tripoli 1 Route, crosses the Wisconsin River at an existing WPSC 345 kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Fourmile Creek

Segment 14b would cross Fourmile Creek in Marathon County five or more times within a distance of two miles. A portion of the proposed transmission line ROW is aligned parallel to and across the meandering stream, maximizing potential impacts to the stream from construction and ROW maintenance. This stretch of the stream is classified as an ERW.

Other Outstanding and Exceptional Resource Waters (OERW)

The route crosses Big Weirgor Creek south of Exeland (segment 308), Middle Fork Main Creek in eastern Rusk County (segment 135), Squaw Creek near the Price-Lincoln County line (segment 107b), and Grass Creek in northern Marathon County (segment 25). Each of these streams is an "ERW."

Nationwide Rivers Inventory

The Tripoli 1 route would cross five river segments listed in the NRI. They are the Chippewa River (segment 303), the Thornapple River (segment 145b1), the North Fork Jump River (segment 131), the South Fork Jump River (segment 127), and the Wisconsin River (segment 1a). The first four rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through a stream or wetland. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads, and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor until it

reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Table 8-1 Rivers and streams on the Tripoli 1 Route (from north to south)

Big Weirgor Creek * τ	Unnamed stream **	Grass Creek * ** τ
Buff Creek **	Hay Creek **	Einert Creek **
Chippewa River **	Unnamed stream **	Big Rib River **
Bear Creek **	South Fork Jump River **	Unnamed stream **
Little Thornapple River **	Unnamed stream **	Scotch Creek
Skunk Creek **	Douglas Creek ** τ	Soda Creek
Thornapple River **	Douglas Creek ** τ	Fourmile Creek * ** τ
Unnamed stream **	Douglas Creek ** τ	Fourmile Creek * ** τ
Crooked Creek	Douglas Creek ** τ	Fourmile Creek * ** τ
Flambeau River	Douglas Creek **	Fourmile Creek * ** τ
Unnamed stream	Unnamed stream **	Fourmile Creek * ** τ
Deer Tail Creek **	Squaw Creek * τ	Fourmile Creek * τ
Unnamed stream **	Squaw Creek * ** τ	Unnamed stream
North Fork Main Creek **	Ritchie Creek ** τ	Fourmile Creek ** τ
Middle Fork Main Creek * ** τ	North Fork Spirit River ** τ	Unnamed stream **
South Fork Main Creek **	Marheime Creek ** τ	Unnamed stream **
Stony Creek	South Fork Spirit River ** τ	Fourmile Creek τ
Unnamed stream	New Wood Creek **	Black Creek ** τ
Needle Creek **	Unnamed stream **	Wisconsin River **
Needle Creek **	Unnamed stream	
North Fork Jump River **	McGinnis Creek ** τ	

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed or another stream or wetland.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no overhead structure present.

Wetlands

Construction of the transmission line can damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete needed for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands either do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times and heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing at all. Likewise, wetlands that are dry at certain times of the year are more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture levels can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the maximum spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in these wetlands. The excavation and heavy equipment required to pour footings and erect the structures would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetlands, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW could require clearing brush or timber for distances of a mile or more, rendering such access impractical. Crossing wetlands over 1,000 feet in width would necessarily require driving equipment through the wetland or on mats laid over the wetland, due to the need to place one or more structures in the wetland.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Tripoli 1 Route would cross numerous wetlands as it passes from Exeland to Weston. The majority of wetlands falls in the forested or shrub/scrub categories. The emergent-type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and may be more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 34 wetlands are greater than 1,000 feet wide at the point where the Tripoli 1 Route crosses them and could require one or more structures to be placed within them.²¹⁹ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 150 wetlands on the Tripoli 1 Route would be at risk of being driven through by construction equipment.

²¹⁹ A count of wetlands greater than 1,000 feet as an indicator of the number of wetlands that could contain transmission line structures represents a “best case scenario.”

In general, wetlands are larger, more frequent, and less accessible between Exeland and the proposed Tripoli Substation sites than between Tripoli and Weston. Some segments along the route pass through extensive areas of wetlands that are relatively inaccessible by road. These include segments 119 and 111 that run east/west between Ogema and Spirit about three miles south of USH 8 and segments 135 and 131 that run east/west north of Ingram and Catawba. The relatively high road density in Marathon County provides improved ROW access opportunities, reducing the probability of wetlands impacts. Most of the Tripoli 1 Route does not follow any facility corridors. If the existing NSP 115 kV Osprey to Prentice line were relocated to double circuit with the new 345 kV line, as proposed, additional wetland impacts would occur along the existing Osprey to Prentice ROW when the existing 115 kV line is removed.

Sensitive wetland areas

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Tripoli 1 Route passes through five tamarack/spruce bogs for a total crossing distance of 1,700 feet. Three of these bogs are located along segment 34 in western Lincoln County. One of these bogs is adjacent to a road. The two remaining bogs are on segment 131 in central Price County and on segment 144 in Rusk County, near the Flambeau River.

The Tripoli 1 Route passes through two ericaceous bogs for a total crossing distance of 2,200 feet. Segment 135 has a 1,800-foot crossing of this type of bog, requiring that at least one transmission structure be placed in the wetland. The other bog is along segment 310, where there is an existing transmission line.

High quality wetlands

Ten wetland (forested and non-forested) areas on the Tripoli 1 Route are associated with OERW or trout streams.

- Forested and scrub/shrub wetlands associated with Middle Fork Main Creek, an ERW and trout stream (segment 135, new corridor).
- Forested and scrub/shrub wetlands associated with Douglas Creek, a trout stream (segment 119, new corridor).
- Forested wetlands associated with Squaw Creek, an ERW and trout stream (segments 107b and 38, new corridor).
- Forested wetlands associated with Ritchie Creek, a trout stream, in Lincoln County (segment 34, new corridor).

- Forested wetlands associated with Marheime Creek, a trout stream (segment 34, new corridor).
- Forested wetlands associated with the South Fork Spirit River, a trout stream (segment 34, new corridor).
- Forested wetlands associated with McGinnis Creek, a trout stream (segment 25, new corridor).
- Scrub/shrub wetlands associated with Grass Creek, an ERW and trout stream (segment 25, new corridor).
- A complex of wetlands southeast of Edgar associated with Fourmile Creek, an ERW and trout stream (segment 14b, new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 8-2 Wetland areas affected by the Tripoli 1 Route

Length of Forested Wetland Crossed (miles)	Length of Non-forested Wetland Crossed (miles)	Total Length of Wetland Crossed (miles)	Total Area of Wetland Affected (acres)
14.6	12.3	26.9	451

Forests

The Tripoli 1 Route is heavily wooded in Rusk, Price, Lincoln, and parts of Marathon County. The part of the route in Lincoln County consists almost entirely of forest, broken only by an occasional road. The proposed transmission line would fragment many large woodland blocks providing forest interior habitat. The specific areas where fragmentation may be a problem are described below.

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas a new 120- to 150-foot wide ROW would be opened through the forest; and in other areas, there would be incremental widening (usually 20 feet) needed where the route follows an existing transmission line corridor and is double circuited.

This route would require a new 120- to 150-foot-wide ROW through 72.4 miles of forest. This new ROW plus the incremental widening along existing ROW would require a total of 1,118 acres of ROW clearing in upland forest and 231 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain 68 acres of cleared upland forest and 14 acres of cleared forested wetland.

ROW clearing in forested areas would consist of removing all tall-growing trees from the proposed ROW. Wood from the cut trees would be hauled off the ROW, stacked at the landowner's request, or burned on-site. Low-growing shrubs and bushes that would not be

expected to interfere with the transmission line may be removed, trimmed, or allowed to remain, depending on their density and growth characteristics.

In addition to fragmentation of large forest blocks, some potential impacts due to forest clearing throughout the project area include degradation of woodland quality due to encroachment of weedy plant species, soil erosion on steep slopes, loss of some wildlife habitat, and introduction or accelerated spread of oak wilt disease.

Oak wilt is a fungal disease that has a high mortality rate, often resulting in death within one year of initial infection. Tree species in the red oak family (red oak, black oak, and northern pin oak) are highly susceptible to oak wilt. Spread of this disease to healthy trees is possible by wounding, pruning, or removing trees during construction or maintenance, especially during spring or early summer when the insects and fungi associated with this disease are most active. (See Chapter 5 for more detail about oak wilt.)

Table 8-3 Forest impacts for the Tripoli 1 Route

	Double Circuit
Total new forest crossed (miles)*	72.5
Upland forest cleared (acres)	1,118
Wetland forest cleared (acres)	231
Total forest cleared (acres)	1,349

* No corridor currently exists of any kind.

Forest fragmentation

The Tripoli 1 Route would fragment 20 forest blocks larger than 1,000 acres. Between Exeland and the proposed Tripoli Substation site, these forest blocks consist mostly of stands of aspen, mixed hardwoods, and maple. Aspen is the most common species. Twelve large forest blocks are fragmented in this area. Between the proposed Tripoli Substation site and northern Marathon County, similar forest types are found, but mixed hardwood stands are predominant. Seven large forest blocks are fragmented in this area, with some of these blocks greater than 8,000 acres in size. Another large forest block consisting of mixed hardwoods is crossed in an area that is part of a planned expansion of the Nine Mile Forest.

Further analysis of forest fragmentation potential was done using a forest block size of 200 to 1,000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential from the creation of new corridor greatly increases when one identifies smaller forest blocks. At least 20 blocks of this size have been delineated on this route.²²⁰ While forest blocks greater than 1,000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200 to 400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife species.

²²⁰ These blocks are mutually exclusive of the 1,000 acre+ blocks and thus have not been double counted for this analysis.

Sixteen of these blocks would be fragmented by the creation of a new corridor. In the other four blocks the proposed transmission line would require expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

Industrial forests

The Tripoli 1 Route passes through about 13.25 miles of forest owned by Tomahawk Timberlands in Corning Township, Lincoln County, south of STH 86. This northern hardwood forest is managed for timber and pulp production by selective cutting. Tomahawk Timberlands opens its lands to the public for non-motorized recreational use. Another two miles of forest owned by forest products industries could be affected in north central Rusk County and eastern Price County.

County forest lands

Rusk County Forest

A 0.75-mile portion of segments 153a and 153b borders the south edge of the Rusk County Forest located north of Glen Flora. The route follows an existing electric transmission line at this location. The route also crosses 5.25 miles of county forestland on new ROW as the route continues east, north of Ingram and Hawkins, into Price County.

Price County Forest

Segment 131 crosses a 5.75-mile wide block of the Price County Forest located north of USH 8, between Catawba and Prentice.

Lincoln County Forest

Segment 34 passes through several blocks of Lincoln County Forest land for a total distance of 3.7 miles. This county forest land is located both north and south of STH 86 and just east of the Price-Lincoln County line.

Marathon County Forest

Near the Weston Substation the route crosses the Nine Mile Forest. This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. Segment 7a parallels Spring Brook Road and a petroleum pipeline and may share these corridors, reducing the incremental impacts. About 1.9 miles of the route would lie on county forestland. For over half this length, the new line would be double circuited with the existing WPSC 345 kV line. In addition, about 1.4 miles of the Tripoli 1 Route crosses an area southwest of the Nine Mile Forest that is within the potential purchase zone for expansion of this county forest unit.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic

habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grassland or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Tripoli 1 Route are described below.

In Lincoln County the route crosses the edge of the territory of the Averill Creek timber wolf pack. The timber wolf is classified as an endangered species in Wisconsin. Timber wolves avoid areas of human activity. Transmission line construction activity could drive the wolves away from this part of their territory during the construction period.

The Tripoli 1 Route crosses the Chippewa and Flambeau Rivers, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment does not enter the rivers and if proper erosion control measures are implemented.

Bird strikes are also a concern where the line would span major rivers like the Chippewa River, the Flambeau River, and the Wisconsin River. Bald eagles are known to use such areas and have been observed in numerous locations along the route. Major rivers also can serve as corridors for daily and migratory flights by numerous birds species.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a state-threatened species, has been observed in three different locations along the route (segments 1, 20, 119). Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

Table 8-4 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 8-4 Threatened and endangered species for the Tripoli 1 Route

Scientific Name	Common Name	Status
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Cyclonaias tuberculata</i>	Purple wartyback mussel	END
<i>Plethobasus cyphus</i>	Bullhead mussel	END
<i>Ophiogomphus bowni</i>	Pygmy snaketail dragonfly	THR
<i>Canis lupus</i>	Timber wolf	END
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federal END)

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

The most common land use zoning designation along the proposed route is agricultural or conservancy. The most notable exception is an area of planned residential development in the town of Mosinee, south of the Nine Mile Forest. In this area the transmission line could inhibit future residential development or constrain the layout of residential lots. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity use lands (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 5.7 miles of the route passes through areas zoned for residential use. About 1.6 miles of this lie along existing transmission line corridor. The majority of the residentially zoned land is near the southern end of the route, in the towns of Mosinee and Rib Mountain, Marathon County. The other residentially zoned area is a two-mile section of the route west of Prentice and east of the Price County Forest. The only part of the route in a commercial/industrial zone is the Weston Power Plant site. Conservancy/recreational zoning is more prevalent along the route, with 5.8 miles so designated. By far the most common zoning designation is agricultural, with 56.3 miles of the route crossing land zoned for agricultural purposes.

The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The properties crossed are listed in the order they are crossed, north to south. The

governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County forest lands are discussed in more detail under the Forest Impacts section of this chapter. Trails are discussed under the Visual Impacts section of this chapter.

• DNR	Segment 303
• Rusk County Forest	Segments 153a, 153b
• Rusk County Forest	Segment 135
• Town of South Fork	Segment 135
• Town of Georgetown	Segment 135
• Price County Forest	Segment 131
• Pine Line Trail	Segment 123
• Town of Knox	Segment 111
• Lincoln County Forest	Segment 34
• Lincoln County	Segment 34
• Lincoln County Forest	Segment 34
• DNR (Ice Age Trail)	Segment 34
• Town of Hamburg	Segment 25
• Marathon County Forest	Segments 7a, 1b, 1a
• Rib Mountain Metro Sewage District	Segment 1a

Agricultural

The Tripoli 1 Route crosses a total of 26.9 miles of agricultural land (21 percent of the total length of the route). Agricultural activity along the route is most concentrated in Marathon County. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. Little farmland is found on the route in Lincoln County and eastern Price County. In Rusk and Price Counties most farming operations revolve around beef cattle, dairy cows, and Christmas tree farms.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on

the proposed project. The executive summary of the AIS is attached as Appendix A in this document.

Visual

Visual impacts would occur over the full length of the Tripoli 1 Route. These visual impacts are related to the amount of new ROW needed and the presence of the new structures, although the incremental visual impact would vary depending on whether other facilities (power lines, pipelines, railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 feet taller, to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Tripoli 1 Route would be in those areas that do not have existing facility corridors. About 85 percent of the length of the route, 111.7 miles, does not follow an existing corridor and would require the purchase of 120 to 150 feet of new ROW where none currently exists.

An increased level of visual impact would occur on the portions of the Tripoli 1 Route that are proposed to be located where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical facilities are present. Because the pipeline companies will not allow transmission line structures on or overhanging the existing pipeline ROW, it would be necessary to widen the cleared corridor by 108 to 132 feet. The new, wider corridor would also contain a very visible transmission line. About 2 percent, or 2.9 miles, of the proposed Tripoli 1 Route is located in a corridor with only an existing underground pipeline. This portion of the route is located south of Exeland, on either side of the Chippewa River. Another 0.8 mile of the route near Weston would be adjacent to a road as well as an underground pipeline.

About 4 percent, or five miles, of the Tripoli 1 Route is proposed to be located along cleared corridors that contain an existing road. The 345 kV line parallels a three-mile section of Tower Road near the Lincoln-Taylor County line and a half-mile length of road west of Prentice. Segments of 115 kV transmission line would be built adjacent to roads near Hawkins and Catawba to connect the relocated NSP 115 kV line to the existing Hawkins and Catawba Substations. These transmission line ROWs could partially overlap road ROWs, reducing the need for new ROW. The 345 kV line would require an additional 91 to 115 feet of ROW, and the 115 kV segments would need an additional 43 feet. Road corridors have visual characteristics similar to rail corridors--the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of the line would be less than where the line would parallel a pipeline corridor, but greater than where it is double circuited with or built parallel to an existing transmission line.

The remaining 8 percent, about 10.4 miles, of the Tripoli 1 Route would be located along existing electric transmission lines. About three miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole, double circuit structures that would be 125 to 135 feet tall. A short length of 69 kV line would be double circuited southwest

of Prentice, requiring a 20-foot expansion of the ROW. The proposed line shares a 4.5-mile corridor with an NSP 115 kV line extending east from the Big Falls Dam on the Flambeau River. The existing line is 50 to 55 feet tall. Because the new line is proposed to be double circuited with the 115 kV lines, the existing corridor would only need to be widened up to 20 feet. New double circuit poles would be 125 to 135 feet tall, with corner structures as tall as 160 feet. Finally, a 2.3-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the Lakehead petroleum pipeline near Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. Most of the route is heavily forested, except for a portion in Marathon County, where farming predominates. In general, the southern end of the route in Marathon County is more densely populated than the rest of the route.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Tripoli 1 Route crosses the Chippewa, and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

The Knox Creek Heritage Center is developing a 5-mile loop nature and historic trail just east of West Knox Road in eastern Price County. Segment 107b would cross this trail twice. One crossing would be adjacent to West Knox Road. Both sides of the road are wooded at this location. The other crossing would be a quarter mile east of the road. The second crossing is located in a wooded area. Clearing required for the transmission line ROW would alter the visual setting of the trail.

A segment of the Ice Age NST is crossed by the Tripoli 1 Route. Segment 34 crosses the trail where it meets Tower Road in Lincoln County. The visual impact to the trail at this location is reduced due to its location adjacent to Tower Road, which already causes an abrupt change to the trail's visual setting.

The Nine Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. Segment 7a parallels Spring Brook Road and a petroleum pipeline corridor, reducing the incremental visual impacts.

Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics, and property values, the number of structures within 300 feet of the proposed centerline is provided in the table below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of facilities within 300 feet on the Tripoli 1 Route to the number on other Tripoli routes.

Table 8-5 Number of facilities within 300 feet of the Tripoli 1 Route

Facility Type*	Double Circuit
Homes 0-50 feet	1 (1)**
Homes 50-100 feet	3 (1)**
Homes 100-150 feet	10(4)**
Homes 150-300 feet	19
Total Homes	33 (6)**
Commercial/industrial/office 0-50 feet	0
Commercial/industrial/office 50-100 feet	1 (1)**
Commercial/industrial/office 100-150 feet	0
Commercial/industrial/office 150-300	0
Total Commercial/Industrial/Office	1 (1)**
Agricultural outbuilding 0-50 feet	1
Agricultural outbuilding 50-100 feet	1 (1)**
Agricultural outbuilding 100-150 feet	4 (2)**
Agricultural outbuilding 150-300 feet	13 (4)**
Total Agricultural Outbuildings	19 (7)**
Total Facilities	53 (15)**

* There are no apartments, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

** This is the portion of the total that is near the proposed 115 kV line extensions rather than the 345 kV line.

Historical and archeological sites

Records of the SHSW indicate that an archeological site is present along the proposed ROW. It is an archaic campsite or village near the Flambeau River (segment 144). The SHSW would require the site to be field surveyed by a qualified archeologist if the project is approved and if the Tripoli 1 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Substation sites

If the Tripoli 1 Route were selected, the proposed Tripoli Substation would be constructed in an area of low population density straddling the Price-Lincoln County line, where the proposed

power line turns from its east-west course and heads south. The substation sites lie in an area of forest and scrub land along CTH YY. Both Site 1 and Site 2 are surrounded by woodland. Of the ten acres to be acquired for the substation, only 2.5 acres would be fenced and would enclose the substation equipment. Vegetation on the remainder of the site would be left undisturbed to allow thick growth to provide screening for the substation. This vegetation may partially screen the substation from the view of motorists on CTH YY. No special landscaping is planned for the site. The substation would be a substantial change to the visual environment of any of the proposed sites. ROW clearing for the transmission lines entering and exiting the substation may increase the visibility of the substation from some locations.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Tripoli 2 Route

Detailed description

The route begins west of Exeland, in Sawyer County, at an existing 69 kV transmission line, and is approximately 138 miles long. Figures 8-5 to 8-8 show the route from north to south. The route follows the transmission line north for about three miles. It then passes south of Exeland as it extends about 18 miles southeast and east to the Flambeau River. The route passes near the Lea Lake Flowage. STH 40, Little Weirgor Creek, the Chippewa River, White Birch Creek, Nail Creek, STH 27, the Little Thornapple River, the Thornapple River, and Crooked Creek are crossed by the route. The route crosses the Flambeau River about three miles north of the Big Falls Dam.

East of the Flambeau River, the route heads southeast for four miles until it meets an existing NSP 115 kV transmission line that travels east-west. The route follows this line east for a mile and would double circuit with the line. The route then diverges from the existing 115 kV ROW and heads southeast for another mile, then turns east and proceeds eastward for another 24 miles to a point about two miles southwest of Prentice. The existing NSP 115 kV line would be relocated and double circuited with the new line on this route. The route crosses CTH B, Deer Tail Creek, North Fork Main Creek, CTH B (again), Middle Fork Main Creek, CTH M, South Fork Main Creek, USH 8, Spring Creek, Morgan Creek, Green Creek, CTH N, Web Creek, CTH I, the North Fork Jump River, Beaver Creek, CTH O, Hobbles Creek, and the South Fork Jump River. This route section passes south of Shamrock Lake, just north of Hawkins, and just south of Kennan and Catawba. The route lies adjacent to 0.3 mile of town roads.

The route then passes south of Prentice and continues eastward another 10 miles as a single circuit line to a proposed Tripoli Substation site (Site 8) located about eight miles east of Prentice. This route section crosses STH 13, Douglas Creek, and CTH C.

At this point the route turns and runs south for 30 miles through Taylor County, and into Marathon County, to a point three miles northwest of Athens, where the route turns east. The

route crosses Knox Creek, the North Fork Spirit River, STH 86, Johnson Creek, STH 102, the South Fork Spirit River, Layman Creek, the Big Rib River, CTH M, Joe Martin Creek, Mink Creek, STH 64, Baldwin Creek, and Beaver Creek.

The route then proceeds east for five miles, crossing Beaver Creek and STH 97, before turning south and continuing for another 15 miles to a point two miles south of Edgar. CTH F, CTH A, Black Creek, Drewek Creek, CTH M, STH 29, CTH M (again), and CTH N are crossed. The route then heads east for three miles, crossing CTH H, and then turns and proceeds southeast and south for four miles, crossing CTH P.

At this point the route heads east until it meets an existing WPSC 345 kV transmission line. The route crosses CTH S, Burns Creek, STH 107, Freeman Creek, Hog Creek, CTH O, CTH B, and Roberts Creek. Where the route meets the WPSC line at CTH KK, it would double circuit with the existing line and follow it to its terminus at the Weston Substation, extending northeast about 1.5 miles, and then heading east for approximately 1.5 miles, crossing CTH KK (three times), Fourmile Creek, Black Creek, and the Wisconsin River.

The Tripoli 2 Route also includes four 115 kV sections. These sections would serve as 115 kV connections to two existing substations and the non-relocated portion of the NSP 115 kV line in order to maintain the service provided by the relocated NSP 115 kV line. The first section extends from a point on the route south of Catawba, north along the west side of Woodlawn Road for approximately one mile. It crosses to the east side of the road and continues north approximately 3,500 feet, crossing USH 8. It would continue north approximately one more mile. It ends at the Catawba Substation located near the intersection of Woodlawn Road and Oak Ridge Avenue. The second section extends north approximately two miles along the east side of CTH M approximately 4,000 feet, from a point on the route north of Hawkins, to the existing Hawkins Substation. The third section extends north from a point on the route about two miles southwest of Prentice, following an existing NSP 69 kV line for 1.2 miles. The new 115 kV line would be built as a double circuit with the existing 69 kV line. The new line would then continue north, as a single circuit line on new ROW for a mile, ending at the intersection with the non-relocated portion of the existing NSP 115 kV transmission line.

Figure 8-5 Tripoli 2 Route (1 of 4)

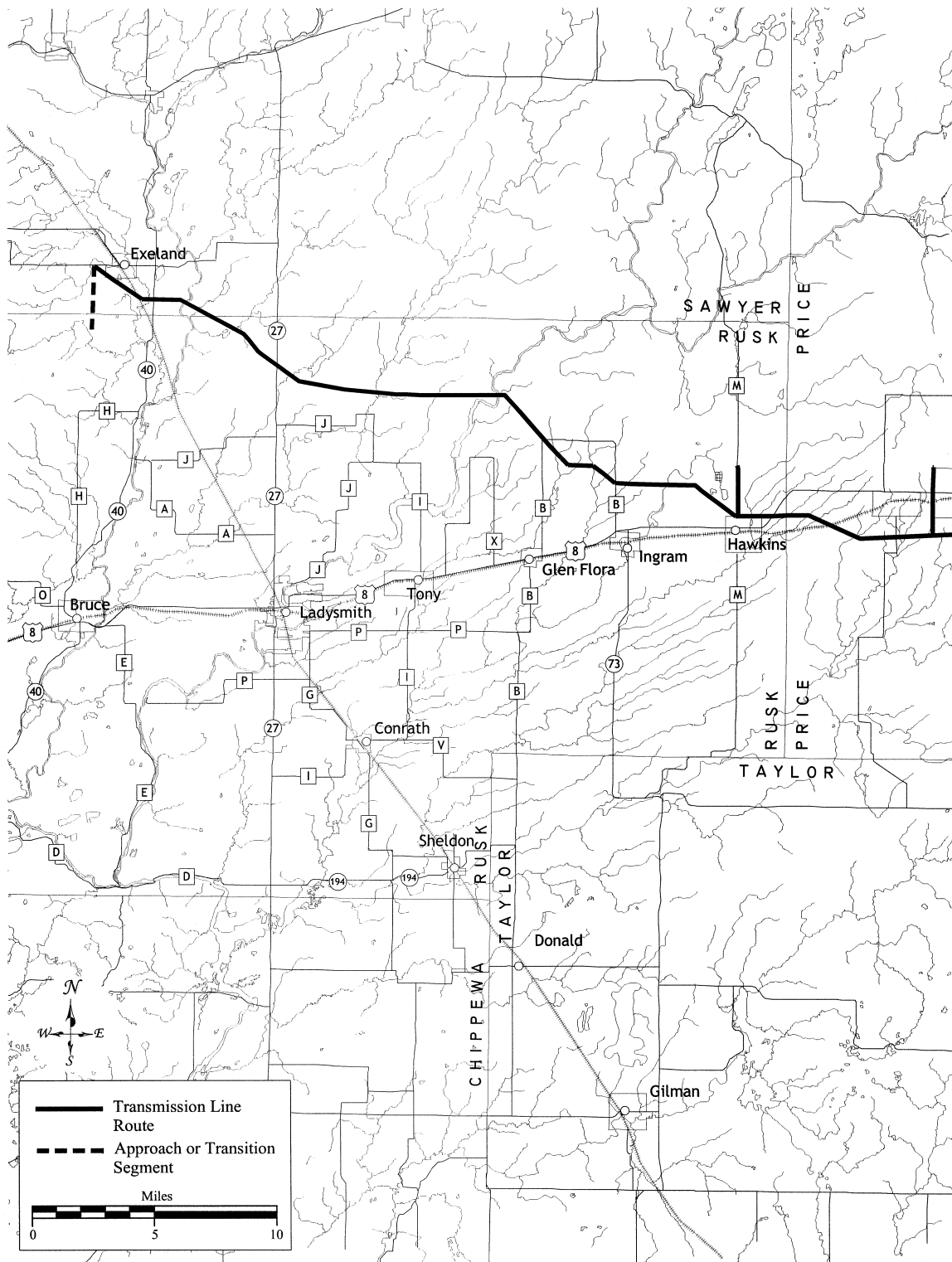


Figure 8-6 Tripoli 2 Route (2 of 4)

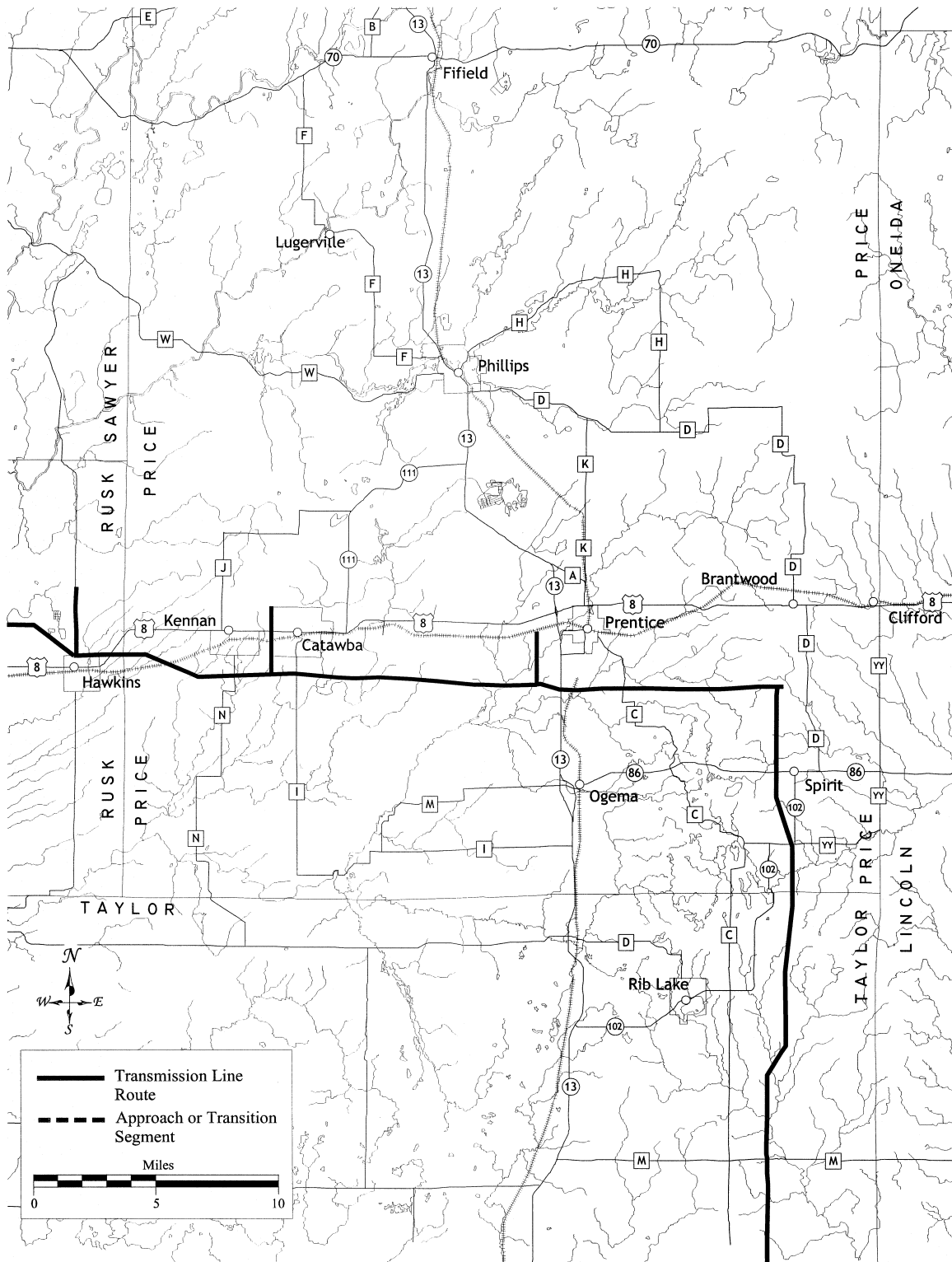


Figure 8-7 Tripoli 2 Route (3 of 4)

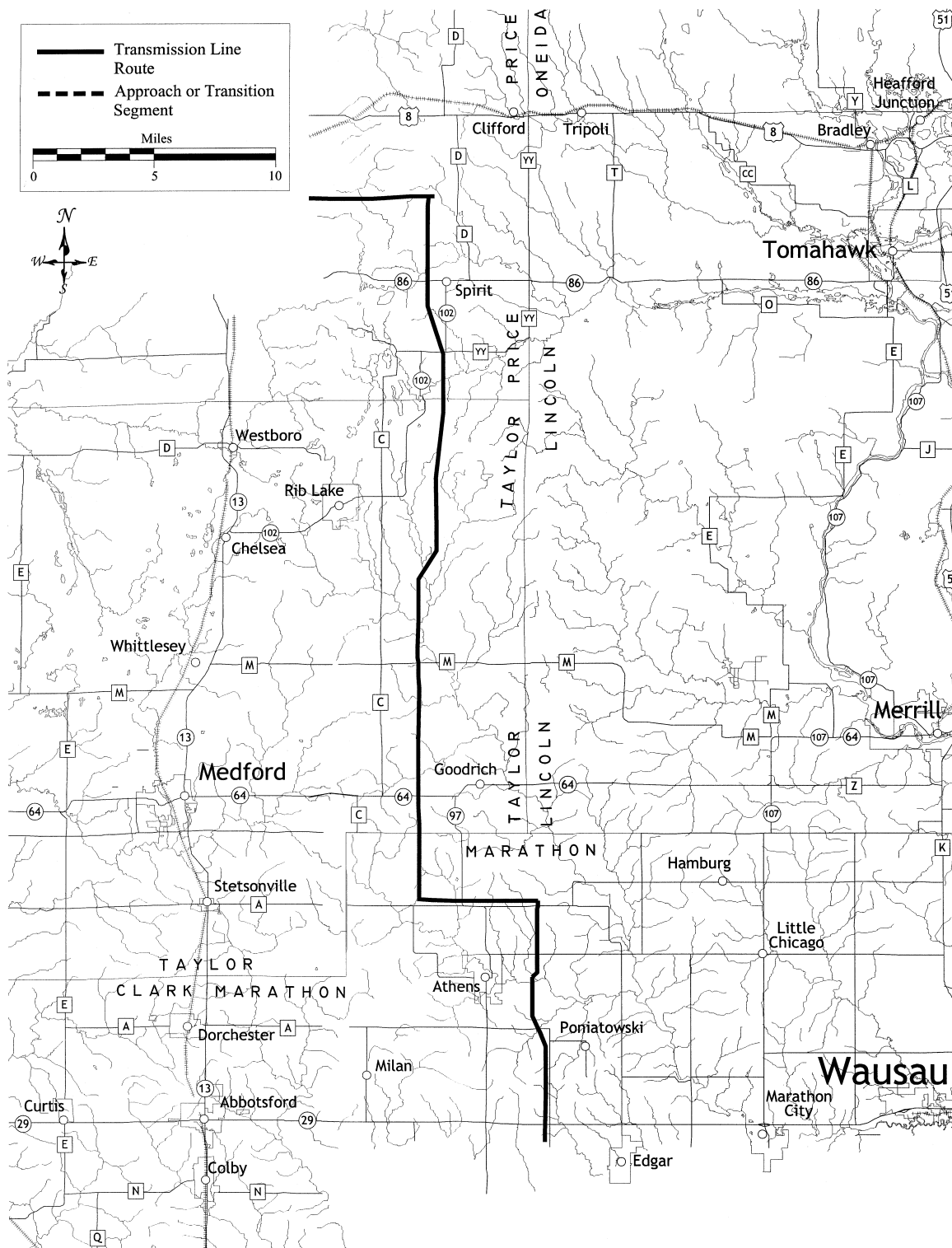
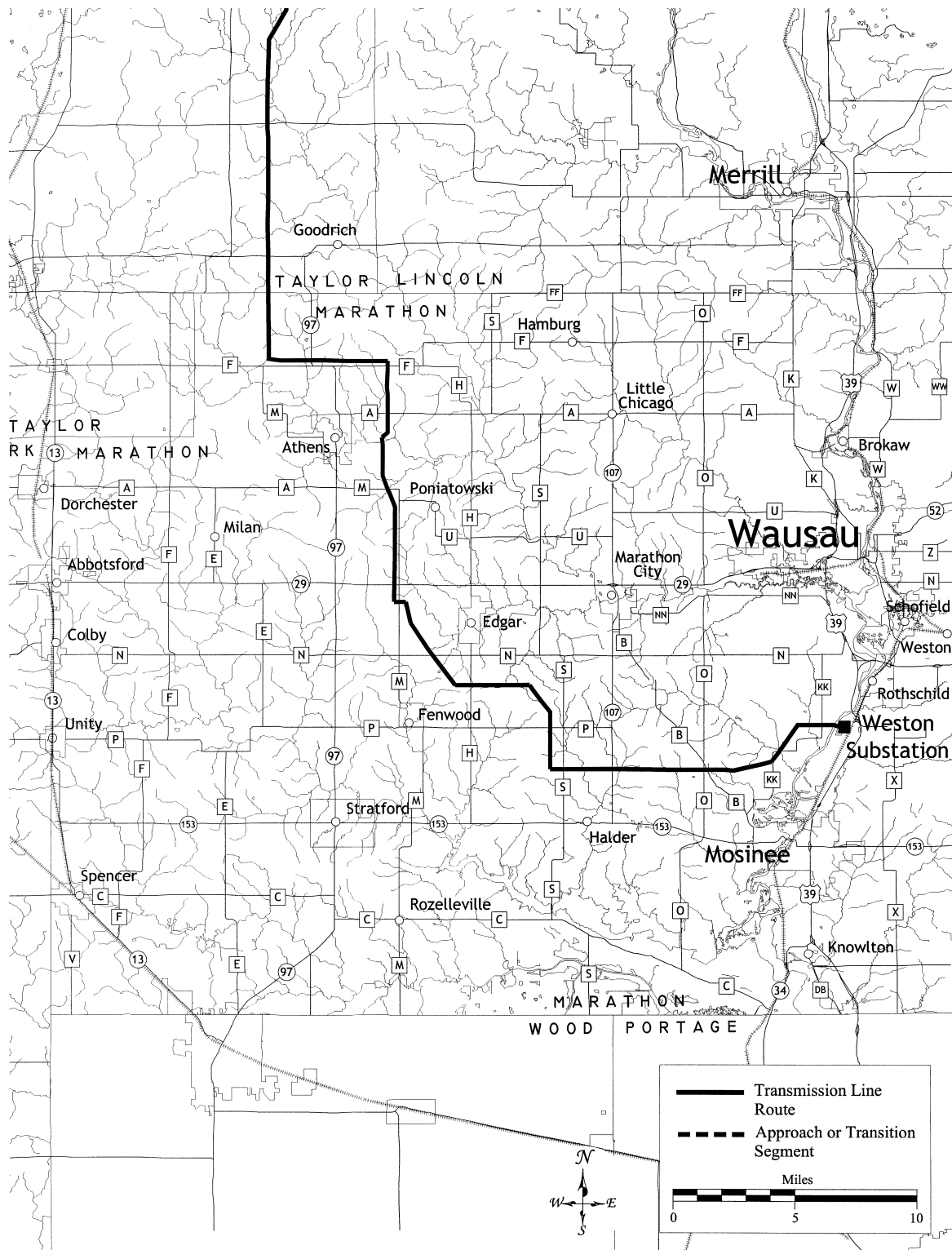


Figure 8-8 Tripoli 2 Route (4 of 4)



Natural resources

Lakes

One lake greater than 20 acres in size is located within 1,000 feet of the proposed centerline for this route. This unnamed, undeveloped lake is located west of Shamrock Lake in eastern Rusk County.

Rivers and streams

There are 56 river/stream crossings on the Tripoli 2 Route. Three of the crossings are over waterways that have been designated as either OERW and eight of the crossings are over waterways classified as trout streams by the DNR. Forty-seven of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the proposed transmission line, but they are not included in this analysis.

Table 8-6 indicates which streams along the Tripoli 2 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout depends on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the aquatic habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

The following section describes specific river and stream crossings affected by the Tripoli 2 Route and the potential impacts of constructing the line in these areas.

Chippewa River

The Tripoli 2 Route (segment 147) crosses the Chippewa River about 0.5 mile north of the Sawyer-Rusk County line where no other infrastructure, such as a road or pipeline, is present. The riverbanks are sloping and wooded at this location. ROW clearing and line construction on or near the steep slopes could lead to soil erosion. Maintaining the existing vegetation on the slopes and revegetating the area at the top of the slope could help to minimize potential erosion. The transmission line would alter the visual setting at the crossing. Boaters would be the principal group impacted.

Flambeau River

Segment 155 crosses the Flambeau River in the Flambeau River State Forest in Rusk County. The portions of the forest within 0.25 mile of the river have been designated wilderness. An electric transmission line would seriously disturb the undeveloped setting of the wilderness area and threaten the wilderness designation for the part of the river downstream from the crossing. A primary purpose of the forest is water quality protection. Clearing a new ROW to the river

could cause direct impacts to the river during construction and reduce the ability of the forest to protect water quality over the long term.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345 kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Outstanding and Exceptional Resource Waters (OERW)

The route crosses the Middle Fork Main Creek in eastern Rusk County (segment 126') and the Big Rib River (segment 29) in southeastern Taylor County, both of which are classified as ERW. Segment 147 crosses Little Weirgor Creek, an ORW, south of Exeland.

Nationwide Rivers Inventory (NRI)

The Tripoli 2 route would cross six river segments listed in the NRI. They are the Chippewa River (segment 147), the Thornapple River (segment 147), the Flambeau River (segment 155b), the North Fork Jump River (segment 126'), the South Fork Jump River (segment 126'), and the Wisconsin River (segment 1a). The first five rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through the stream or wetland. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Table 8-6 Rivers and streams on the Tripoli 2 Route (from north to south)

Little Weirgor Creek * τ	Unnamed stream **	Big Rib River * ** τ
Chippewa River **	North Fork Jump River **	Unnamed stream **
White Birch Creek **	Beaver Creek **	Joe Martin Creek **
Unnamed stream **	Hobbles Creek **	Unnamed stream **
Nail Creek **	Unnamed stream **	Unnamed stream **
Unnamed stream **	South Fork Jump River **	Mink Creek τ
Little Thornapple River **	Unnamed stream **	Beaver Creek
Thornapple River **	Unnamed stream **	Unnamed stream
Crooked Creek **	Unnamed stream **	Black Creek
Flambeau River **	Unnamed stream **	Drewek Creek **
Unnamed stream **	Douglas Creek **	Burns Creek **
Deer Tail Creek **	Douglas Creek **	Freeman Creek ** τ
Unnamed stream **	Douglas Creek **	Unnamed stream **
North Fork Main Creek **	Unnamed stream **	Hog Creek **
Unnamed stream **	Unnamed stream **	Unnamed stream **
Middle Fork Main Creek * ** τ	Unnamed stream	Fourmile Creek
South Fork Main Creek	North Fork Spirit River ** τ	Black Creek ** τ
Unnamed stream **	South Fork Spirit River ** τ	Wisconsin River **
Web Creek	Layman Creek **	

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed or another stream or wetland.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no overhead structure present.

Wetlands

Construction of the transmission line can damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete needed for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands either do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times and heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing at all. Likewise, wetlands that are dry at certain times of the year are

more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture levels can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the maximum spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in these wetlands. The excavation and heavy equipment required to pour footings and erect the structures would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetlands, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW could require clearing brush or timber for distances of a mile or more, rendering such access impractical. Crossing wetlands over 1,000 feet in width would necessarily require driving equipment through the wetland or on mats laid over the wetland due to the need to place one or more structures.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Tripoli 2 route would cross many wetlands as it passes from Exeland to Weston. The majority of wetlands falls in the forested or shrub/scrub categories. The emergent type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and may be more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 35 wetlands are greater than 1,000 feet wide at the point where the Tripoli 2 Route crosses them and could require one or more structures to be placed within them.²²¹ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the

²²¹ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission line structures represents a “best case scenario.”

line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 186 wetlands on the Tripoli 2 Route would be at risk of being driven through by construction equipment.

In general, wetlands are larger, more frequent, and less accessible between Exeland and the proposed Tripoli Substation sites than between Tripoli and Weston. Some segments along the route pass through extensive areas of wetlands that are relatively inaccessible by road. These include segments 126 and 122 that cross USH 8 near Hawkins and run in an easterly direction south of Catawba and Prentice. Segment 147, which runs southeast from the Exeland area toward STH 27, also passes through large wetland areas between Nail Creek and the Thornapple River. The relatively high road density in Marathon County provides improved ROW access opportunities, reducing the probability of wetlands impacts. Most of the route does not follow any facility corridors. If the existing NSP 115 kV Osprey- Prentice line were relocated to double circuit with the new 345 kV line, as proposed, additional wetland impacts would occur along the existing Osprey-Prentice ROW from the removal of the existing line.

Sensitive wetland areas

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Tripoli 2 Route passes through four tamarack/spruce bogs for a total crossing distance of 1,800 feet. Segment 126 has two bogs, one of which involves a 1,100-foot crossing, requiring that at least one transmission structure be placed in the wetland. Another bog is on segment 155b. The final bog is located on segment 160, adjacent to a road, where a 115 kV connector line would be built.

The Tripoli 2 Route passes through three ericaceous bogs for a total crossing distance of 1,200 feet. These bogs are located on segments 147, 309, and 310. Segment 310 has an existing transmission line.

High quality wetlands

Nine wetland (forested and non-forested) areas on the Tripoli 2 Route are associated with OERW, trout streams, or state forests.

- Emergent/wet meadow wetlands associated with Little Weirgor Creek, an ORW (segment 147, new corridor).
- Forested wetlands just east of Flambeau Road, in the Flambeau River State Forest (segment 155b, new corridor).
- Scrub/shrub wetlands associated with Middle Fork Main Creek, an ERW and trout stream (segment 126, new corridor).

- Forested wetlands associated with the North Fork Spirit River, a trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with the South Fork Spirit River, a trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with the Big Rib River, an ERW and trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with Mink Creek, a trout stream (segment 29, new corridor).
- Forested wetlands associated with Freeman Creek, a trout stream (segment 11, new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 8-7 Wetland areas affected by the Tripoli 2 Route

Length of Forested Wetland Crossed (miles)	Length of Non-forested Wetland Crossed (miles)	Total Length of Wetland Crossed (miles)	Total Area of Wetland Affected (acres)
12.1	12.9	25.0	418

Forests

The Tripoli 2 Route is heavily wooded in Rusk, Price, Taylor, and parts of Marathon County. Large areas of farmland are more common in Marathon County. The proposed transmission line would fragment many large woodland blocks providing forest interior habitat. The specific areas where fragmentation may be a problem are described below.

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas a new 120- to 150-foot wide ROW would be opened through the forest; and in other areas, incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

Construction in forested areas would consist of removing all tall-growing trees from the proposed ROW. Low-growing shrubs and bushes may be removed or allowed to remain, depending on their density and growth characteristics.

This route would require a new 120- to 150-foot-wide ROW through 72.8 miles of forest. This new ROW plus the incremental widening along existing ROW would require a total of 1,085 acres of ROW clearing in upland forest and 198 acres of forested wetland clearing. The existing

facility corridors that would be overlapped by the transmission line ROW contain 53 acres of cleared upland forest and six acres of cleared forested wetland.

ROW clearing in forested areas would consist of removing all tall-growing trees from the proposed ROW. Wood from the cut trees would be hauled off the ROW, stacked at the landowner's request, or burned on-site. Low-growing shrubs and bushes that would not be expected to interfere with the transmission line may be removed, trimmed, or allowed to remain, depending on their density and growth characteristics.

In addition to fragmentation of large forest blocks, some potential impacts due to forest clearing throughout the project area include degradation of woodland quality due to encroachment of weedy plant species, soil erosion on steep slopes, loss of some wildlife habitat, and introduction or accelerated spread of oak wilt disease.

Oak wilt is a fungal disease that has a high mortality rate, often resulting in death within one year of initial infection. Tree species in the red oak family (red oak, black oak, and northern pin oak) are highly susceptible to oak wilt. Spread of this disease to healthy trees is possible by wounding, pruning, or removing trees during construction or maintenance, especially during spring or early summer when the insects and fungi associated with this disease are most active. (See Chapter 5 for more detail about oak wilt.)

The Tripoli 2 Route crosses at least one sugarbush. A transmission line ROW cutting through a sugarbush would reduce the grove's production of maple sap. Impacts to sugarbushes are described in more detail in Chapter 5.

Table 8-8 Forest impacts for the Tripoli 2 Route

	Double Circuit
Total new forest crossed (miles)*	72.8
Upland forest cleared (acres)	1,085
Wetland forest cleared (acres)	198
Total forest cleared (acres)	1,283

* No corridor currently exists of any kind.

Forest fragmentation

The Tripoli 2 Route would fragment 20 forest blocks larger than 1,000 acres. Between Exeland and the proposed Tripoli Substation site, these forest blocks consist of stands of aspen, mixed hardwoods, and sugar maple. Aspen is the most common forest species in this area. Fourteen large forest blocks are fragmented in this area. Between the proposed Tripoli Substation site and northern Marathon County, these same forest types are found, but mixed hardwood stands predominate. Five large forest blocks are fragmented in this area, but some of these blocks are very large. The route would fragment one forest block larger than 1,000 acres in Marathon County. It is in a planned expansion area for the Burma Road Unit of the Marathon County Forest (segment 11).

Further analysis of forest fragmentation potential was done using a forest block size of 200 to 1,000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential from the creation of new corridor greatly increases when one identifies smaller forest blocks. At least 22 blocks of this size have been delineated on this route.²²² All of these blocks would be fragmented by the creation of a new corridor. While forest blocks greater than 1,000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200-400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife.

Industrial forests

The Tripoli 2 Route could pass through up to 4.75 miles of forest owned by forest products industries (industrial forest). Most (3.25 miles) of this industrial forest is located in Rusk and Price Counties with lesser amounts impacted in Marathon and Taylor Counties.

County and state forest lands

Flambeau River State Forest

Segment 155 crosses the Flambeau River in the Flambeau River State Forest in Rusk County. The portions of the forest within 0.25 mile of the river have a special wilderness designation. The area where the crossing occurs is quite remote. An electric transmission line would seriously disturb the undeveloped setting of the wilderness. Also, a primary purpose of the forest is water quality protection. Removal of trees and construction activity could have an adverse effect on water quality in the river.

Rusk County Forest

Segment 147 crosses 4.4 miles of the Rusk County Forest located north of Ladysmith, passing about 0.25 mile south of the Lea Lake Flowage. Segments 155b, 155a, 154, and 139b cross another 4.0 miles of the Rusk County Forest east of the Flambeau River.

Taylor County Forest

A 0.5-mile portion of segment 29 borders the west edge of the Taylor County Forest located east of Spirit Lake. As segment 29 continues south it crosses 1.1 miles of county forestland southeast of Spirit Lake.

Marathon County Forest

The route passes about 0.25 mile north of the Burma Road Unit of the Marathon County Forest. About 0.75 mile of segment 11 lies within the potential purchase zone for expansion of this county forest unit.

Near the Weston Substation, the route crosses the Nine Mile Forest. This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. The route would avoid most trails in the forest. About 1.6

²²² These blocks are mutually exclusive of the 1000 acre+ blocks and thus have not been double counted for this analysis.

miles of the route cross county forestland. For two-thirds of this length, the new line would be double circuited with the existing WPSC 345 kV line.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Tripoli 2 Route are described below.

The Tripoli 2 Route crosses the Chippewa and Flambeau Rivers, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment stays out of the rivers and if proper erosion control measures are implemented.

Bird strikes are also a concern where the line would span major rivers such as the Chippewa River, the Flambeau River, and the Wisconsin River. Bald eagles are known to use these areas. Major rivers also can serve as corridors for daily and migratory flights by numerous bird species.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Emydoidea blandingii*), a state-threatened species, has been found along the route (segment 1). Construction activities could present a threat to turtle nests. Impacts to the turtle could be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

Table 8-9 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 8-9 Threatened and endangered species for Tripoli 2 Route

Scientific Name	Common Name	State Status
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Cyclonaias tuberculata</i>	Purple wartyback mussel	END
<i>Plethobasus cyphus</i>	Bullhead mussel	END
<i>Ophiogomphus howei</i>	Pygmy snaketail dragonfly	THR
<i>Ophiogomphus anomalus</i>	Extra-striped clubtail dragonfly	END
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federally END)
<i>Canis lupus</i>	Timber wolf	END

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

The most common land use zoning designation along the proposed route is agricultural or conservancy. The most notable exception is an area of planned residential development in the town of Mosinee, south of the Nine Mile Forest. In this area the transmission line could inhibit future residential development or constrain the layout of residential lots. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity use lands (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 6.5 miles of the route passes through areas zoned for residential use. About 1.8 miles of this lie along existing transmission line corridors. A little more than half the residentially zoned land is near the southern end of the route, in the towns of Mosinee and Rib Mountain, Marathon County. Another concentration is located south and east of Catawba, in Price County. The remaining residentially zoned area is a 0.1-mile section of the route near Exeland, in Sawyer County. The only part of the route in a commercial/industrial zone is the Weston Power Plant site. Conservancy/recreational zoning is more prevalent along the route, with 1.6 miles so designated. By far the most common zoning designation is agricultural, with 65.6 miles lying in agricultural zones.

The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County and state forestland are discussed in more detail under the Forest Impacts section of this chapter. Trails are discussed under the Visual Impacts section of this chapter.

• Village of Exeland	Segment 309
• Rusk County Forest	Segment 147
• Flambeau River State Forest	Segment 155b
• Rusk County Forest	Segments 155b, 155a, 154, 139b
• Town of Kennan	Segment 126
• Pine Line Trail	Segment 122
• Price County	Segment 112
• Taylor County Forest (Ice Age Trail)	Segment 29
• Town of Mosinee	Segment 11
• Marathon High School	Segment 11
• Marathon County Forest	Segments 8b, 1b, 1a
• Rib Mountain Metro Sewage District	Segment 1a

Agricultural

The Tripoli 2 Route crosses a total of 38.9 miles of agricultural land (28 percent of the total length of the route). Agricultural activity along the route is most concentrated in Marathon County. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. Little farmland is found on the route in eastern Price County. In Rusk, Price, and Taylor Counties most farming operations revolve around beef cattle, dairy cows, and Christmas tree farms.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Tripoli 2 Route. These visual impacts are related to the amount of new ROW needed and the presence of the new structures, although the incremental visual impact would vary depending on whether any facilities (power lines, pipelines, railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 feet taller, to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Tripoli 2 Route would be in those areas that do not have existing facility corridors. About 90 percent of the route, 123.9 miles, does not follow an existing corridor and would require the purchase of 120 to 150 feet of new ROW where none currently exists.

About 0.7 percent, or 0.9 mile, of the Tripoli 2 Route is proposed to be located along corridors that only have an existing road. The proposed line would lie next to about 0.5 mile of road just northeast of Hawkins. Segments of 115 kV transmission line would be built adjacent to roads near Hawkins and Catawba to connect the relocated NSP 115 kV line to the existing Hawkins and Catawba Substations. The transmission line ROWs could partially overlap road ROWs, reducing the need for new ROW. The 345 kV line would require an additional 91 to 115 feet of ROW, and the 115 kV segments would need an additional 43 feet. Road corridors have visual characteristics similar to rail corridors--the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of the line sited along a road would be less than where the line would parallel a pipeline corridor, but greater than where it is double circuited with or built parallel to an existing transmission line.

The remaining 6 percent, about 8.4 miles, of the Tripoli 2 Route would be located along existing electric transmission lines. About 3.6 miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole, double circuit structures that would be 125 to 135 feet tall. A one-mile length of NSP 115 kV line would be double circuited northwest of Ingram, requiring a 20-foot expansion of the ROW. This existing line is 50 to 55 feet tall. New double circuit poles would be 125 to 135 feet tall, with corner structures as tall as 160 feet. About a mile of 69 kV line would be double circuited southwest of Prentice, to connect the relocated NSP 115 kV line to the existing 115 kV system. No ROW expansion would be required for this 115 kV connection. The existing 69 kV H-frame structures are 35 to 45 feet tall. The new double circuit poles would be 85 to 110 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the NSP 69 kV line north of Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, the impact would be more pronounced due to

the ROW clearing required. Although the line may be visible over long distances in open farmland, its visual impact may be less because of other existing man-made structures. Most of the route is heavily forested, except for a portion in Marathon County, where farming predominates. In general, the southern end of the route in Marathon County is more densely populated than the rest of the route.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Tripoli 2 Route crosses the Chippewa, Flambeau, and Big Rib Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

The Pine Line Recreation Trail follows an abandoned railroad ROW between Prentice and Medford. Segment 122 crosses this bicycle trail south of Prentice. The area where the trail would be crossed is partially wooded.

The Knox Creek Heritage Center is developing a 5-mile loop nature and historic trail just east of West Knox Road in eastern Price County. The trail would be crossed by segment 110 as it enters Substation Site 8. The trail is along West Knox Road at this point. Both sides of the road are wooded at this location.

Timm's Hill is the highest point (1,951.5 feet above sea level) in Wisconsin and is the location of a Price County park. An observation tower is located atop the hill. The route passes about three miles north of the hill as it heads east and west, and about three miles east of the hill as the route travels north and south. At this distance the transmission line would not be highly visible to viewers on the observation tower. Hills and forest would also partially screen the line from view.

A certified segment of the Ice Age NST is crossed by segment 29 in the Taylor County Forest. The power line would be roughly perpendicular to the trail. The trail at this location is in a near-wilderness setting. The transmission line would drastically alter this setting.

The Nine Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Visual impacts would be less serious because the new line would be double circuited with the existing 345 kV line.

Proximity of residences to the centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics and property values, the number of structures within 300 feet of the proposed centerline is provided below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of facilities within 300 feet on the Tripoli 2 Route to the number on other Tripoli routes.

Table 8-10 Number of facilities within 300 feet of Tripoli 2 Route

Facility Type*	Double Circuit
Homes 0-50 feet	1 (1) **
Homes 50-100 feet	5 (2) **
Homes 100-150 feet	13 (7) **
Homes 150-300 feet	17 (2) **
Total Homes	36 (12) **
Commercial/industrial/office 0-50 feet	0
Commercial/industrial/office 50-100 feet	1 (1) **
Commercial/industrial/office 100-150 feet	0
Commercial/industrial/office 150-300 feet	0
Total Commercial/Industrial/Office	1 (1) **
Agricultural outbuilding 0-50 feet	1
Agricultural outbuilding 50-100 feet	1
Agricultural outbuilding 100-150 feet	6 (5) **
Agricultural outbuilding 150-300 feet	16 (9) **
Total Agricultural/Outbuildings	24 (14) **
Total Facilities	61 (27) **

*There are no apartments, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

**The portion of the total that is near the proposed 115 kV line extensions rather than the 345 kV line.

Historical and archeological sites

An archeological site listed with the SHSW has been identified near this route's proposed ROW. It is an early Euro-American logging camp near the Flambeau River (segment 155). The SHSW wants the site to be field surveyed by a qualified archeologist if the project is approved and if the approved route extends through it. The utility has already agreed to survey where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the utility states that it would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Substation sites

If the Tripoli 2 Route were selected, the proposed Tripoli Substation would be constructed in an area of low population density in eastern Price County where the proposed power line turns from its east-west course and heads south. The substation sites lie in an area of mixed forest, scrubland, and scattered farm fields along West Knox Road. Site 9 is surrounded by woodland. Site 8 is located at the north edge of some pastureland, but woodland is located on all other sides of the site. Site 8 may be visible from one to three homes south of the site, depending on the exact layout of the substation at the site. Of the ten acres to be acquired for the site, only 2.5 acres would be fenced and would enclose the substation equipment. Vegetation on the

remainder of the site would be left undisturbed to allow thick growth to provide screening for the substation. Motorists on the lightly traveled nearby roads, as well as hikers on the Knox Creek Heritage Trail, may see the substations. The substation would be a substantial change to the visual environment of the proposed sites. ROW clearing for the transmission lines entering and exiting the substation may increase the visibility of the substation from some locations. The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Tripoli 3 Route

Detailed description

The Tripoli 3 Route is approximately 132 miles long. Figures 8-9 to 8-12 show the route from north to south. The route begins about three miles south of Exeland, in Rusk County, at an existing 69 kV transmission line. The route follows the transmission line north for about three miles. It then extends southeast, passing south of Exeland, crossing the Wisconsin Central Railroad. The route then turns south to meet the rail line. The route then continues southeast along the east side of the railroad ROW for approximately three miles. Just north of the Chippewa River the route crosses to the west side of the railroad and continues southeast for another 1.5 miles. In this distance the route crosses the Sawyer-Rusk County line, Little Weirgor Creek, STH 40, and the Chippewa River.

The route then turns eastward, and proceeds cross-country for about 12 miles, crossing Bear Creek, CTH J, the Little Thornapple River, STH 27, Skunk Creek, the Thornapple River, CTH J, and Crooked Creek. The route crosses the Flambeau River just south of the Big Falls Dam. It then follows an existing NSP 115 kV line east for about 30 miles, about 10 miles of which lie near town roads. The length along the existing line would be rebuilt as a double circuit line with the existing 115 kV line. The route crosses CTH X, CTH B, Deer Tail Creek, North Fork Main Creek, CTH B (again), Middle Fork Main Creek, CTH M, Shamrock Creek, South Fork Main Creek, Stony Creek, CTH J, STH 111, the North Fork Jump River, Hay Creek, and USH 8, and passes just north of Catawba.

About two miles southwest of Prentice, the route turns and proceeds south two miles, leaving the corridor of the NSP 115 kV line, but double circuiting with a mile of NSP 69 kV transmission line before turning east once again. This short section of the route crosses the South Fork Jump River.

The route then passes south of Prentice and continues eastward another 10 miles as a single circuit line to a proposed Tripoli Substation site (Site 8) located about eight miles east of Prentice. This route section crosses STH 13, Douglas Creek, and CTH C.

At this point the route turns and runs south for 30 miles, through Taylor County, and into Marathon County, to a point three miles northwest of Athens, where the route turns east. The route crosses Knox Creek, the North Fork Spirit River, STH 86, Johnson Creek, STH 102, the

South Fork Spirit River, Layman Creek, the Big Rib River, CTH M, Joe Martin Creek, Mink Creek, STH 64, Baldwin Creek, and Beaver Creek.

The route then proceeds east for five miles, crossing Beaver Creek and STH 97, before turning south and continuing for another 15 miles to a point two miles south of Edgar. CTH F, CTH A, Black Creek, Drewek Creek, CTH M, STH 29, CTH M (again), and CTH N are crossed.

South of Edgar the route turns, proceeding east about 11 miles, crossing CTH H, CTH S, STH 107, CTH B, Fourmile Creek, and CTH O. A half-mile east of CTH O the route turns and heads south about two miles, again crossing Fourmile Creek. The route then turns east and proceeds about three miles to an existing WPSC 345 kV transmission line that would double circuit with the proposed line. Fourmile Creek would be crossed again. The route then follows the 345 kV line to its terminus at the Weston Substation, extending northeast about a mile, and then heads east for approximately 1.5 miles, crossing Black Creek, CTH KK, and the Wisconsin River.

Figure 8-9 Tripoli 3 Route (1 of 4)

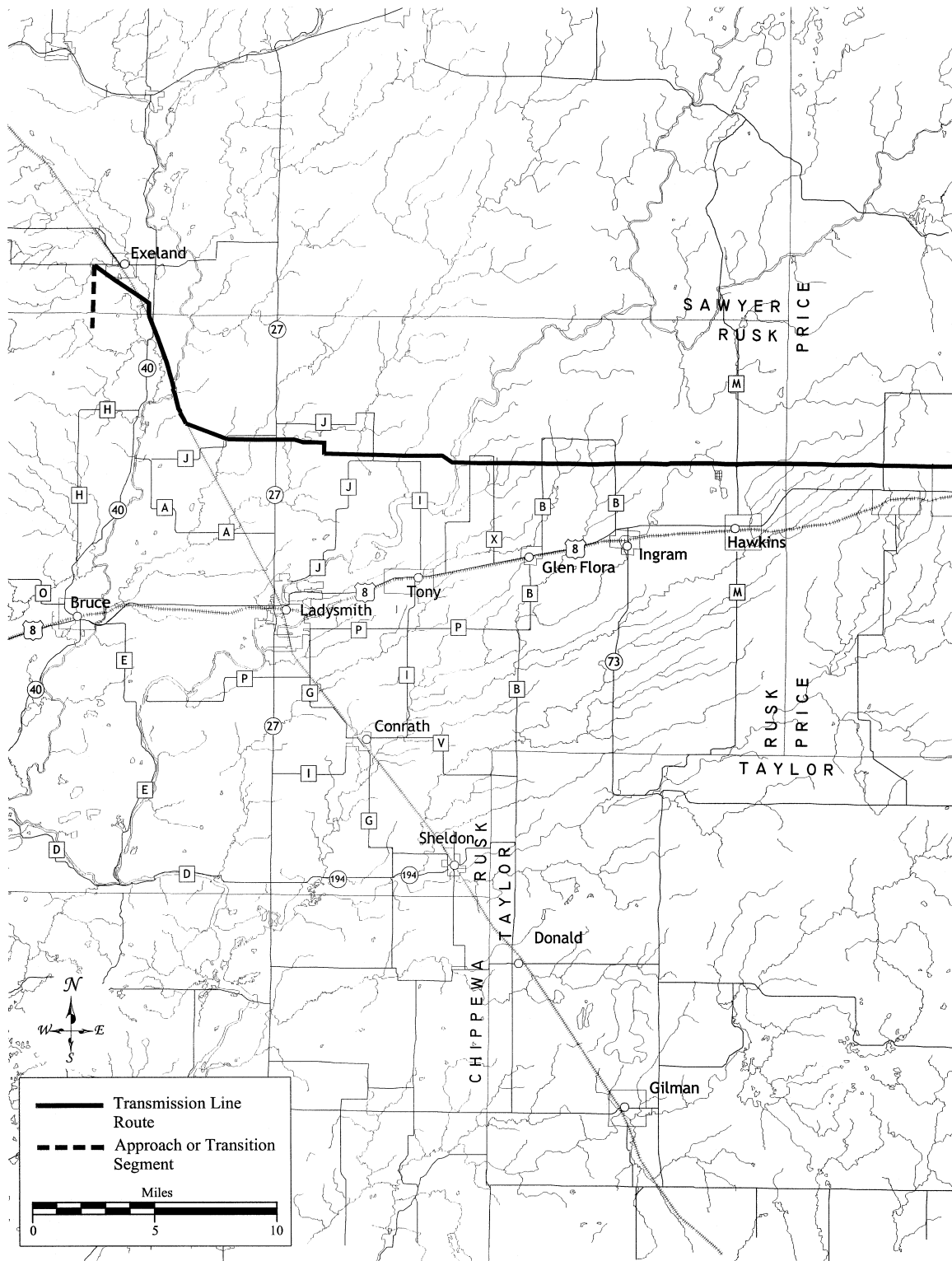


Figure 8-10 Tripoli 3 Route (2 of 4)

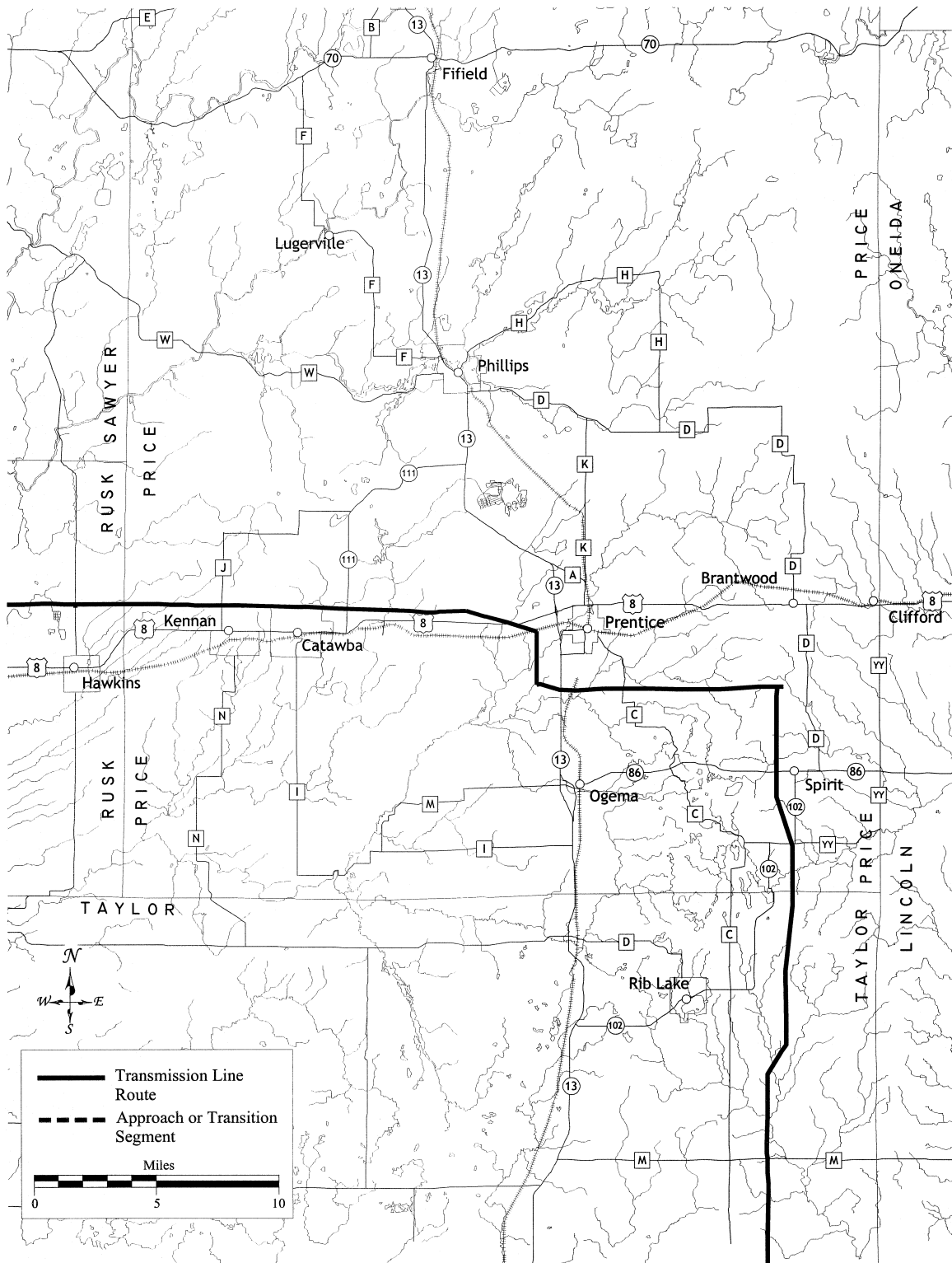


Figure 8-11 Tripoli 3 Route (3 of 4)

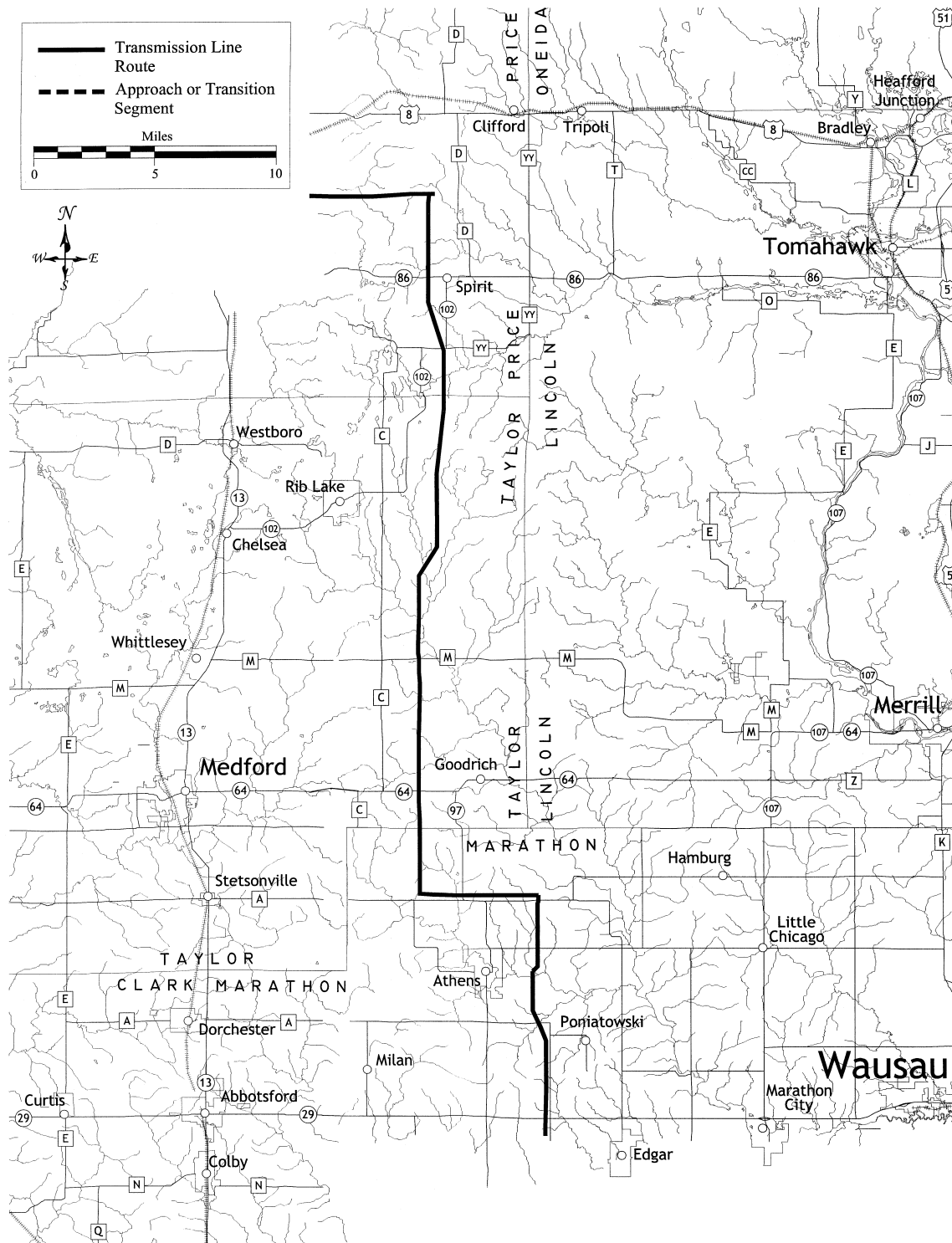
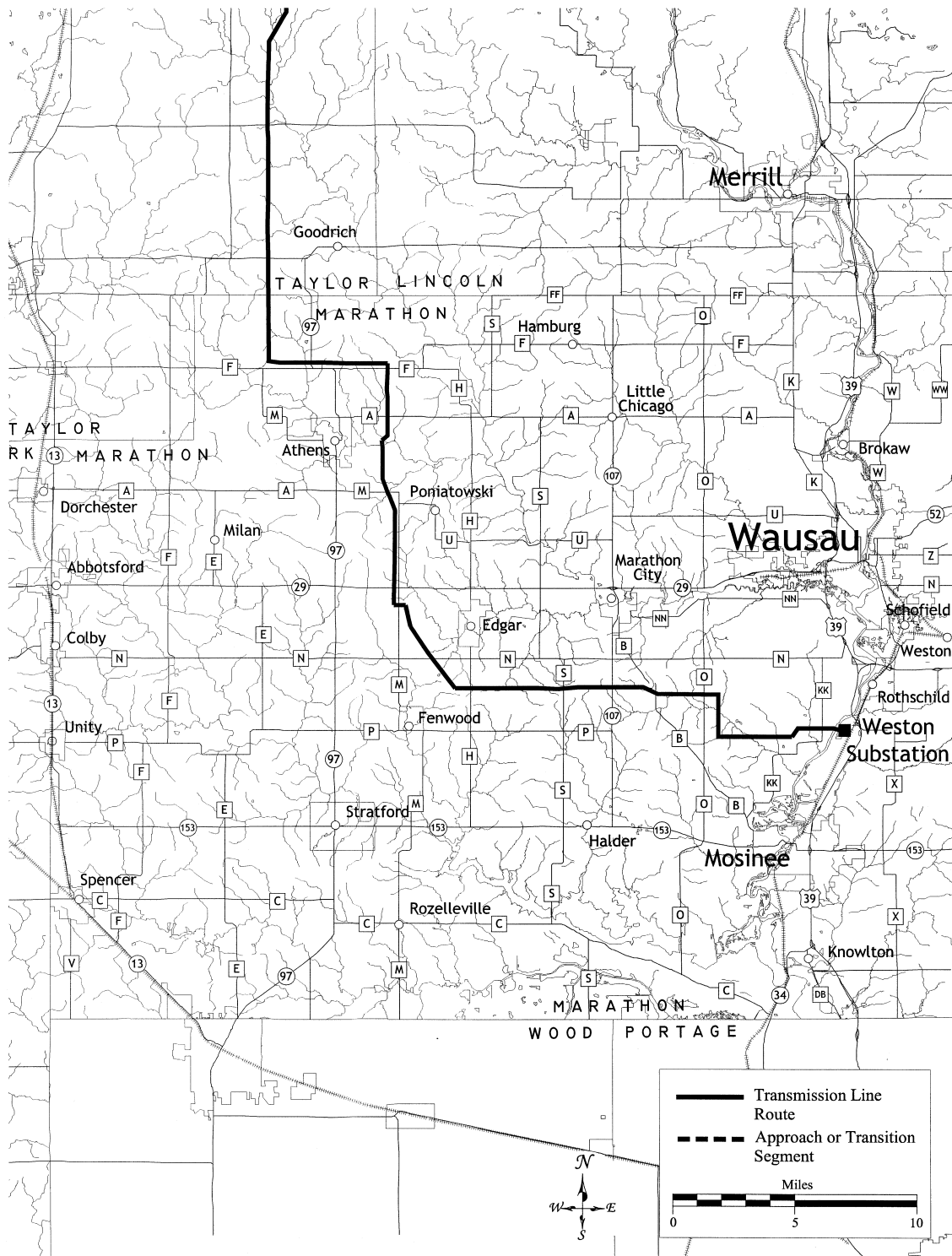


Figure 8-12 Tripoli 3 Route (4 of 4)



Natural resources

Lakes

There are no lakes over 20 acres in size within 1,000 feet of the proposed centerline for this route.

Rivers and streams

There are 60 river/stream crossings on the Tripoli 3 Route. Nine of the crossings are over waterways that have been designated as either OERW and 15 of the crossings are over waterways classified as trout streams by the DNR. Forty-seven of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the proposed transmission line, but they are not included in this analysis.

Table 8-11 indicates which streams along the Tripoli 3 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout depends on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the aquatic habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

The following section describes specific rivers and streams affected by the Tripoli 3 Route and the potential impacts of constructing the line in these areas.

Chippewa River

The Chippewa River crossing for Segment 305 is adjacent to a railroad bridge. The river banks are steep and wooded at this location. The visual impact of this crossing is reduced due to the imposing presence of the railroad bridge. However, ROW clearing on the steep slopes could cause soil erosion on a short and long-term basis. Maintaining the existing vegetation on the river banks or revegetating the slopes and areas at the top of the banks could minimize potential erosion. Boaters would be the principal group affected by the visual changes at the crossing.

Flambeau River

Segment 144 crosses the Flambeau River about a quarter mile south of the Big Falls Dam. Two existing transmission lines cross the river between the dam and the proposed power line crossing. The riverbank is steeply sloped and wooded at the proposed crossing. A canoe portage is located at the dam site. A new transmission line would be visible to canoeists on the river.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345 kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Fourmile Creek

Segment 14b would cross Fourmile Creek in Marathon County five or more times within a distance of two miles. A portion of the stream flows within the transmission line ROW, parallel to the proposed centerline, maximizing impacts to the stream from construction and ROW maintenance. This stretch of the stream is classified as an “Exceptional Resource Water.”

Other Outstanding and Exceptional Resource Waters (OERW)

Segment 307 crosses Little Weirgor Creek, an ORW, south of Exeland. Segment 156 crosses the Middle Fork Main Creek in eastern Rusk County (segment 156) which is classified an ERW. Segment 29 crosses the Big Rib River, an ERW, in eastern Taylor County.

Nationwide Rivers Inventory (NRI)

The Tripoli 3 route would cross five river segments listed in the NRI. They are the Chippewa River (segment 305), the Thornapple River (segment 145b1), the North Fork Jump River (segment 130), the South Fork Jump River (segment 127), and the Wisconsin River (segment 1a). The first four rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The Nationwide Rivers Inventory is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through the stream. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor at least until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or

constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Table 8-11 Rivers and streams on the Tripoli 3 Route (from north to south)

Little Weirgor Creek * ** τ	Unnamed stream	Joe Martin Creek **
Chippewa River	Hay Creek **	Unnamed stream **
Bear Creek **	Hay Creek **	Unnamed stream **
Little Thornapple River **	Hay Creek **	Mink Creek τ
Skunk Creek **	South Fork Jump River **	Beaver Creek
Thornapple River **	Unnamed stream **	Unnamed stream
Unnamed stream **	Unnamed stream **	Black Creek
Crooked Creek	Unnamed stream **	Drewek Creek **
Flambeau River	Unnamed stream **	Fourmile Creek * ** τ
Unnamed stream	Douglas Creek **	Fourmile Creek * ** τ
Deer Tail Creek **	Douglas Creek **	Fourmile Creek * ** τ
Unnamed stream **	Douglas Creek **	Fourmile Creek * ** τ
North Fork Main Creek **	Unnamed stream **	Fourmile Creek * ** τ
Unnamed stream	Unnamed stream **	Fourmile Creek * τ
Middle Fork Main Creek * ** τ	Unnamed stream	Unnamed stream
Shamrock Creek **	North Fork Spirit River ** τ	Fourmile Creek ** τ
South Fork Main Creek **	South Fork Spirit River ** τ	Unnamed stream **
North Fork Jump River **	Layman Creek **	Fourmile Creek ** τ
Unnamed stream **	Big Rib River * ** τ	Black Creek ** τ
Unnamed stream **	Unnamed stream **	Wisconsin River **

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed or another stream or wetland.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no overhead structure present.

Wetlands

Construction of the transmission line has the potential to damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete needed for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands either do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times and heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing at all. Likewise, wetlands that are dry at certain times of the year are more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture levels can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 1,000 feet in width could likely be spanned. For 115 kV construction, the maximum spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in these wetlands. The excavation and heavy equipment required to pour footings and erect the structures would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetland, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW could require clearing brush or timber for distances of a mile or more, rendering such access impractical. Crossing wetlands over 1,000 feet in width would necessarily require driving equipment through the wetland or on mats laid over the wetland, due to the need to place one or more structures in the wetland.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Tripoli 3 route would cross numerous wetlands as it passes from Exeland to Weston. The majority of wetlands falls in the forested or shrub/scrub categories. The emergent type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and is therefore more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 29 wetlands are greater than 1,000 feet wide at the point where the Tripoli 3 Route crosses them and could require one or more structures to be placed within them.²²³ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 171 wetlands on the Tripoli 3 Route would be at risk of being driven through by construction equipment.

In general, wetlands are larger, more frequent, and less accessible between Exeland and the proposed Tripoli Substation sites than between Tripoli and Weston. Some segments along the route pass through extensive areas of wetlands that are relatively inaccessible by road. Segments 156 and 130, which follow an existing NSP transmission line ROW north of USH 8 between Ingram and Prentice, pass through large wetlands associated with several forks of Main Creek and Stony Creek. The potential for substantial adverse impacts is somewhat dependent on the degree of prior disturbance caused by the construction and maintenance of the existing transmission line. The potential for wetland impacts due to large difficult-to-access areas also exists along segment 122 that runs east from STH 13 south of Prentice. The relatively high road density in Marathon County provides improved ROW access opportunities, reducing the probability of wetlands impacts. Between the Flambeau River and Prentice, the route follows the ROW of an existing 115 kV transmission line. The wetland impacts along this portion of the route would be incremental in nature as the existing transmission line has likely caused some degradation of wetlands along its ROW.

Sensitive wetland areas

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Tripoli 3 Route has a 700-foot crossing of a tamarack/spruce bog on segment 144 in Rusk County, near the Flambeau River.

The Tripoli 3 Route passes through three ericaceous bogs for a total crossing distance of 1,600 feet. These bogs are located on segments 130, 309, and 310. Segments 130 and 310 have existing transmission lines.

High quality wetlands

Eight wetland (forested and non-forested) areas on the Tripoli 3 Route are associated with OERW or trout streams.

²²³ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission line structures represents a “best case scenario.”

- Shrub/scrub wetlands associated with Little Weirgor Creek, an ORW (segment 307, new corridor).
- Scrub/shrub wetlands associated with Middle Fork Main Creek, an ERW and trout stream (segment 156, existing transmission line corridor).
- Forested wetlands associated with the North Fork Spirit River, a trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with the South Fork Spirit River, a trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with the Big Rib River, an ERW and trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with Mink Creek, a trout stream (segment 29, new corridor).
- A complex of wetlands southeast of Edgar associated with Fourmile Creek, an ERW and trout stream (segments 14b and 48, new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 8-12 Wetland area affected by the Tripoli 3 Route

Length of Forested Wetland Crossed (miles)	Length of Non-forested Wetland Crossed (miles)	Total Length of Wetland Crossed (miles)	Total Area of Wetland Affected (acres)
11.0	12.4	23.4	388

The Tripoli 3 Route is heavily wooded in Rusk, Price, Taylor, and parts of Marathon County. Large areas of farmland are more common in Marathon County. The proposed transmission line would fragment many large woodland blocks providing forest interior habitat. The specific areas where fragmentation may be a problem are described below.

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas, a new 120 to 150-foot wide ROW would be opened through the forest; and in other areas, incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

This route would require a new 120- to 150-foot-wide ROW through 50.3 miles of forest. This new ROW plus the incremental widening along existing ROWs, would require a total of 858 acres of ROW clearing in upland forest and 140 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain only 206 acres of cleared upland forest and 42 acres of cleared forested wetland.

ROW clearing in forested areas would consist of removing all tall-growing trees from the proposed ROW. Wood from the cut trees would be hauled off the ROW, stacked at the landowner's request, or burned on-site. Low-growing shrubs and bushes that would not be expected to interfere with the transmission line may be removed, trimmed, or allowed to remain, depending on their density and growth characteristics.

In addition to fragmentation of large forest blocks, some potential impacts due to forest clearing throughout the project area include degradation of woodland quality due to encroachment of weedy plant species, soil erosion on steep slopes, loss of some wildlife habitat, and introduction or accelerated spread of oak wilt disease.

Oak wilt is a fungal disease that has a high mortality rate, often resulting in death within one year of initial infection. Tree species in the red oak family (red oak, black oak, and northern pin oak) are highly susceptible to oak wilt. Spread of this disease to healthy trees is possible by wounding, pruning, or removing trees during construction or maintenance, especially during spring or early summer when the insects and fungi associated with this disease are most active. (See Chapter 5 for more detail about oak wilt.)

The Tripoli 3 Route crosses at least one sugarbush. A transmission line ROW cutting through a sugarbush would reduce the grove's production of maple sap. Impacts to sugarbushes are described in more detail in Chapter 5.

Table 8-13 Forest impacts for the Tripoli 3 Route

	Double Circuit
Total new forest crossed (miles)*	50.3
Upland forest cleared (acres)	858
Wetland forest cleared (acres)	140
Total forest cleared (acres)	998

* No corridor currently exists of any kind.

Forest fragmentation

The Tripoli 3 route would fragment 11 forest blocks larger than 1,000 acres. Between Exeland and the proposed Tripoli Substation site, these forest blocks consist of stands of aspen, mixed hardwoods, and maple. Aspen is the most common forest type in this area. Five large forest blocks are fragmented in this area. Between the Tripoli site and northern Marathon County, these same forest types are found, but mixed hardwood stands are predominant. Five large forest blocks are fragmented in this area, but some of these blocks are very large. The route would fragment one forest block larger than 1,000 acres in Marathon County, at the Nine Mile Forest.

Further analysis of forest fragmentation potential was done using a forest block size of 200 to 1,000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential from the creation of new corridor greatly increases when one identifies

smaller forest blocks. At least 19 blocks of this size have been delineated on this route.²²⁴ While forest blocks greater than 1,000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200-400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife species.

Eighteen of these blocks would be fragmented by the creation of a new corridor. In the remaining block the proposed transmission line would require the expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

Industrial forests

The Tripoli 3 Route could pass through up to 4.5 miles of forest owned by forest products industries (industrial forest). Most (four miles) of this industrial forest is located in Rusk and Price Counties with lesser amounts impacted in Marathon and Taylor Counties. In Price County, most of this industrial forest is located along an existing transmission line ROW.

County and state forest lands

Rusk County Forest

A 2.0-mile portion of segment 156 lies on the south edge of the Rusk County Forest located northwest of Hawkins, following an existing electric transmission line.

Price County Forest

Segment 130 lies just inside the southern boundary of 2.2 miles of the Price County Forest located north of USH 8, between Catawba and Prentice. The route follows an existing electric transmission line at this location.

Taylor County Forest

A 0.5 mile portion of segment 29 borders the west edge of the Taylor County Forest, which is located east of Spirit Lake. As segment 29 continues south, it crosses 1.1 miles of Taylor County forestland southeast of Spirit Lake.

Marathon County Forest

Near the Weston Substation the route crosses the Nine Mile Forest. This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. About 2.1 miles of the route cross county forestland. For about a third of this length, the new line would be double circuited with the existing WPSC 345 kV line. The remaining portion of the crossing (segment 48) would cross several trails. Substituting segments 14a, 7a, 7a, and 1b for segment 48 would reduce impacts to the forest by reducing the number of trail crossings, sharing the Spring Brook Road and petroleum pipeline corridor, and by double circuiting with the WPSC 345 kV line for an additional 0.9-mile. In addition, about 0.75-mile of

²²⁴ These blocks are mutually exclusive of the 1,000 acre+ blocks and thus have not been double counted for this analysis.

the Tripoli 3 Route crosses an area southwest of the Nine Mile Forest that is within the potential purchase zone for expansion of this county forest unit.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Tripoli 3 Route are described below.

The Tripoli 3 Route crosses the Chippewa and Flambeau Rivers, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment stays out of the rivers and if proper erosion control measures are implemented.

Bird strikes are also a concern where the line would span major rivers like the Chippewa, Flambeau, and Wisconsin Rivers. Bald eagles are known to use these areas. Major rivers also can serve as corridors for daily and migratory flights by numerous bird species.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a threatened species, has been found along the route (segment 1). Construction activities could present a threat to turtle nests. Impacts to the turtle can be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

Table 8-14 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. More surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 8-14 Threatened and endangered species for the Tripoli 3 Route

Scientific Name	Common Name	State Status
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Cyclonaias tuberculata</i>	Purple wartyback mussel	END
<i>Plethobasus cyphus</i>	Bullhead dragonfly	END
<i>Ophiogomphus bowni</i>	Pygmy snaketail dragonfly	THR
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federally END)
<i>Canis lupis</i>	Timber wolf	END

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

The most common land use zoning designation along the proposed route is agricultural or conservancy. The most notable exception is an area of planned residential development in the town of Mosinee, south of the Nine Mile Forest. In this area the transmission line could inhibit future residential development or constrain the layout of residential lots. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity use lands (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 3.1 miles of the route pass through areas zoned for residential use. About 1.5 miles of this lie along existing transmission line corridors. The majority of the residentially zoned land is near the southern end of the route, in the towns of Mosinee and Rib Mountain, Marathon County. The other residentially zoned area is a 0.7-mile section of the route east of Catawba in Price County. Two parts of the route pass through commercial/industrial zones. One is at the Weston Power Plant site. The other is located near the Chippewa River, southeast of Exeland. Conservancy/recreational zoning is more prevalent along this route, with 2.2 miles so designated. By far the most common zoning designation is agricultural, with 64.7 miles of the route crossing through land zoned for agricultural use.

The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The governmental owner of each property must voluntarily agree to grant an easement if the transmission line is to cross the parcel. County forestlands are discussed in more detail under the Forest Impacts section of this chapter. Trails are discussed under the Visual Impacts section of this chapter.

- | | |
|--|--------------------------------|
| • Village of Exeland | Segment 309 |
| • Rusk County Forest | Segments 155b, 155a, 154, 139b |
| • Rusk County Forest | Segments 153a, 139b |
| • Rusk County Forest | Segment 156 |
| • Pine Line Trail | Segment 122 |
| • Price County | Segment 112 |
| • Taylor County Forest (Ice Age Trail) | Segment 29 |
| • Marathon County Forest | Segments 48, 1a |
| • Rib Mountain Metro Sewage District | Segment 1a |

Agricultural

The route crosses a total of 40.9 miles of agricultural land (31 percent of the total length of the route). Agricultural activity along the route is most concentrated in Marathon County. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. Little farmland is found on the route in eastern Price County. In Rusk, Price, and Taylor Counties most farming operations revolve around beef cattle, dairy cows, and Christmas tree farms.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Tripoli 3 Route. These visual impacts are related to the amount of ROW needed and the presence of the new structures, although the incremental visual impact would vary depending on whether any facilities (power lines, pipelines,

railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 feet taller, to 120 to 150 feet of new ROW for 85- to- 130 foot structures where no facilities currently exist.

The greatest visual impact along the Tripoli 3 Route would be in those areas that do not have existing facility corridors. About 69 percent of the length of the route, 91.3 miles, does not follow an existing corridor and would require the acquisition of 120 to 150 feet of new ROW where none currently exists. Most of this lies between Prentice and Weston.

About 4 percent, or 4.8 miles, of the Tripoli 3 Route is proposed to be located along a railroad corridor north of Ladysmith. Because the railroad company will not allow transmission line structures on or overhanging the existing railroad ROW, the existing cleared corridor would be widened 98 to 122 feet. Railroad facilities are generally more visible than a pipeline corridor but the visual impact is predominantly non-vertical, and often cannot be seen from very far away. The additional visual impact of siting the new line next to the railroad may be less than if it were placed along an existing pipeline corridor, but more than where it would be double circuited with or built parallel to a transmission line.

The remaining 27 percent, about 36.4 miles, of the Tripoli 3 Route would be located along existing electric transmission lines. About two miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole double circuit structures that would be 125 to 135 feet tall. The new 345 kV line would also be double circuited with a 30.5-mile length of NSP 115 kV line between the Big Falls Dam on the Flambeau River and Prentice. This section of the route would require a 20-foot expansion of the ROW. About ten miles of this existing line also parallel roads. The present structures for the 115 kV line are 50 to 55 feet tall. New double circuit poles would be 125 to 135 feet tall, with corner structures as tall as 160 feet. About a mile of 69 kV line would be double circuited southwest of Prentice, requiring 20 feet of additional ROW. The existing 69 kV H-frame structures are 35 to 45 feet tall. The new double circuit poles would be 125 to 135 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the NSP 69 kV line north of Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. Most of the route is heavily forested, except for a portion in Marathon County, where farming predominates. In general, the southern end of the route in Marathon County is more densely populated than the rest of the route.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Tripoli 3 Route crosses the Chippewa and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

The Pine Line Recreation Trail follows an abandoned railroad ROW between Prentice and Medford. Segment 122 crosses this bicycle trail south of Prentice. The area where the trail would be crossed is partially wooded.

The Knox Creek Heritage Center is developing a 5-mile loop nature and historic trail just east of West Knox Road in eastern Price County. The trail would be crossed by segment 110 as it enters Substation Site 8. The trail is next to West Knox Road at this point. Timm's Hill is the highest point (1951.5 feet above sea level) in Wisconsin and is the location of a Price County park. An observation tower is located atop the hill. The route passes about three miles north of the hill as it heads east and west, and about three miles east of the hill as the route travels north and south. At this distance the transmission line would not be highly visible to viewers on the observation tower. Hills and forest would also partially screen the line from view.

A certified segment of the Ice Age NST is crossed by segment 29 in the Taylor County Forest. The power line would be roughly perpendicular to the trail. The trail at this location is in a near-wilderness setting. The transmission line would drastically alter this setting.

The Nine Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Trails are concentrated in areas of the forest north of Spring Brook Road. Segment 48 would cross several trails. Visual impacts would be less serious on segment 1a because the new line would be double circuited with the existing 345 kV line.

Proximity of residences to centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics and property values, the number of structures within 300 feet of the proposed centerline is provided in the table below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of facilities within 300 feet on the Tripoli 3 Route to the number on other Tripoli routes.

Table 8-15 **Number of facilities within 300 feet of the Tripoli 3 Route**

Facility Type*	Double Circuit
Homes 0-50 feet	0
Homes 50-100 feet	11
Homes 100-150 feet	15
Homes 150-300 feet	37
Total Homes	63
Commercial/industrial/office 0-50 feet	0
Commercial/industrial/office 50-100 feet	0
Commercial/industrial/office 100-150 feet	0
Commercial/Industrial/Office 150-300 feet	0
Total Commercial/Industrial/Office	0
Agricultural outbuilding 0-50 feet	1
Agricultural outbuilding 50-100 feet	4
Agricultural outbuilding 100-150 feet	3
Agricultural outbuilding 150-300 feet	25
Total Agricultural/Outbuildings	33
Total Facilities	96

*There are no apartments, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

Historical and archeological sites

Records of the SHSW indicate that an archeological site is present along the proposed ROW. It is an archaic campsite or village near the Flambeau River (segment 144). The SHSW would require the site to be field surveyed by a qualified archeologist if the project is approved and if the Tripoli 3 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Substation sites

If the Tripoli 3 Route were selected, the proposed Tripoli Substation would be constructed in an area of low population density in eastern Price County where the proposed power line turns from its east-west course and heads south. The substation sites lie in an area of mixed forest, scrubland, and scattered farm fields along West Knox Road. Site 9 is surrounded by woodland. Site 8 is located at the north edge of some pastureland, but woodland is located on all other sides of the site. Site 8 may be visible from one to three homes south of the site, depending on the exact layout of the substation at the site. Of the ten acres to be acquired for the site, only 2.5 acres would be fenced and would enclose the substation equipment. Vegetation on the remainder of the site would be left undisturbed to allow thick growth to provide screening for the substation. Motorists on the lightly traveled nearby roads, as well as hikers on the Knox Creek Heritage Trail, may see the substations. The substation would be a substantial change to

the visual environment of the proposed sites, but Site 9 would probably be screened from view by surrounding trees.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Tripoli 4 Route

Detailed description

The Tripoli 4 Route is approximately 132 miles long. Figures 8-13 to 8-14 show the route from north to south. The route begins west of Exeland, in Sawyer County, at an existing 69 kV transmission line. The route follows the transmission line south for about three miles. It then extends southeast, following the Lakehead petroleum pipeline for about 4.5 miles. This section of the route crosses Big Weirgor Creek, Buff Creek, STH 40, and the Chippewa River.

The route then turns eastward, and proceeds cross-country for about 12 miles, crossing Bear Creek, CTH J, the Little Thornapple River, STH 27, Skunk Creek, the Thornapple River, CTH J, and Crooked Creek. The route crosses the Flambeau River just south of the Big Falls Dam. It then follows an existing NSP 115 kV line east for about 30 miles, about 10 miles of which lie near town roads. The length along the existing line would be rebuilt as double circuit line with the existing 115 kV line. The route crosses CTH X, CTH B, Deer Tail Creek, North Fork Main Creek, CTH B (again), Middle Fork Main Creek, CTH M, Shamrock Creek, South Fork Main Creek, Stony Creek, CTH J, STH 111, the North Fork Jump River, Hay Creek, and USH 8, and passes just north of Catawba.

About two miles southwest of Prentice, the route turns and proceeds south two miles, leaving the corridor of the NSP 115 kV line, but double circuiting with a mile of NSP 69 kV transmission line before turning east once again. This short section of the route crosses the South Fork Jump River.

The route then passes south of Prentice and continues eastward another 10 miles as a single circuit line to a proposed Tripoli Substation site (Site 8) located about eight miles east of Prentice. This route section crosses STH 13, Douglas Creek, and CTH C.

At this point the route turns and runs south for 30 miles, through Taylor County, and into Marathon County, to a point three miles northwest of Athens, where the route turns east. The route crosses Knox Creek, the North Fork Spirit River, STH 86, Johnson Creek, STH 102, the South Fork Spirit River, Layman Creek, the Big Rib River, CTH M, Joe Martin Creek, Mink Creek, STH 64, Baldwin Creek, and Beaver Creek.

The route then proceeds east for five miles, crossing Beaver Creek and STH 97, before turning south and continuing for another 15 miles to a point two miles south of Edgar. CTH F, CTH A, Black Creek, Drewek Creek, CTH M, STH 29, CTH M (again), and CTH N are crossed. The

route then heads east for three miles, crossing CTH H, and then turns and proceeds southeast and south for four miles, crossing CTH P.

At this point the route heads east until it meets an existing WPSC 345 kV transmission line. The route crosses CTH S, Burns Creek, STH 107, Freeman Creek, Hog Creek, CTH O, CTH B, and Roberts Creek. Where the route meets the WPSC line at CTH KK, it would double circuit with the existing line and follow it to its terminus at the Weston Substation, extending northeast about 1.5 miles, and then heading east for approximately 1.5 miles, crossing CTH KK (three times), Fourmile Creek, Black Creek, and the Wisconsin River.

Figure 8-13 Tripoli 4 Route (1 of 4)

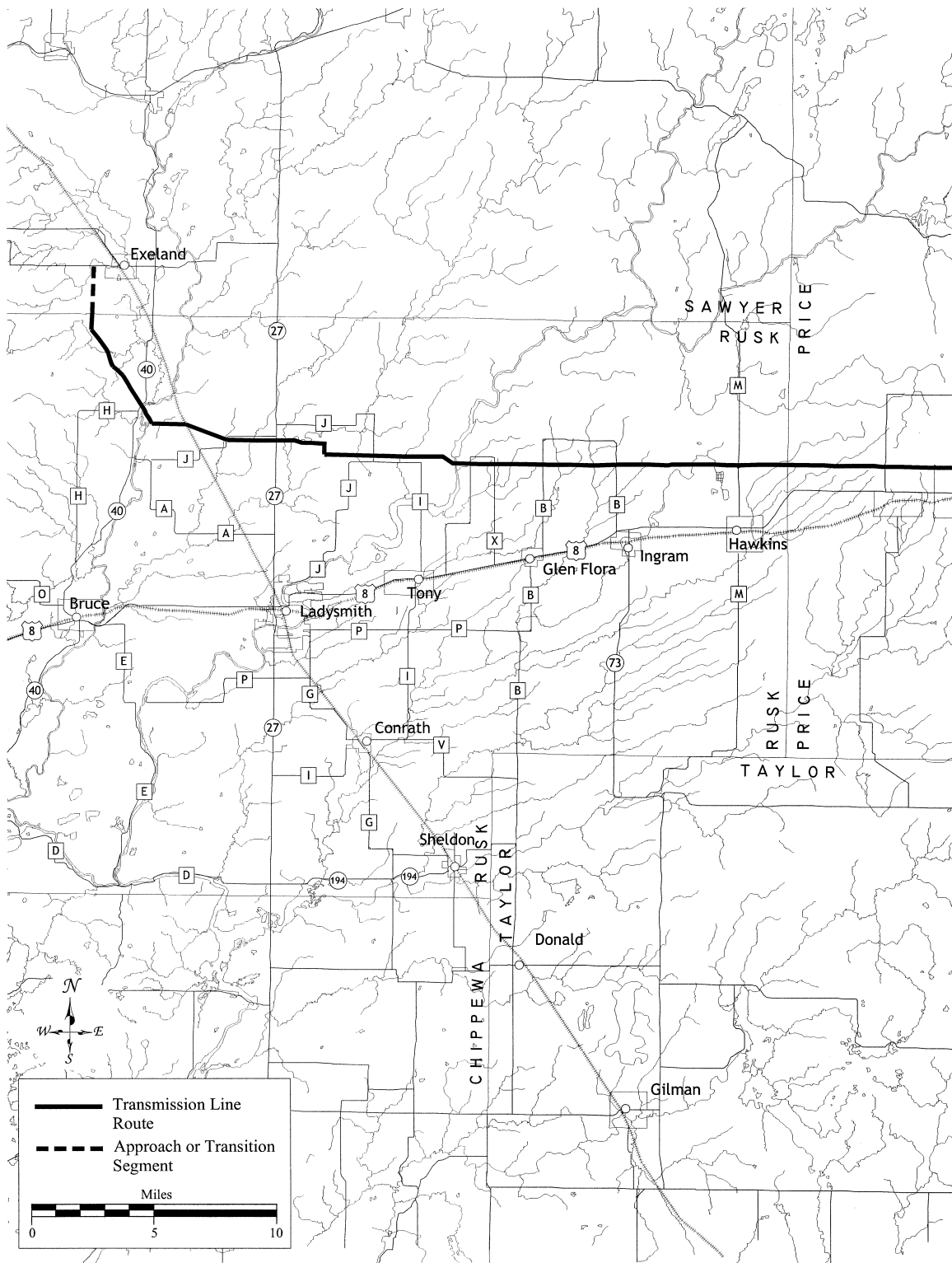


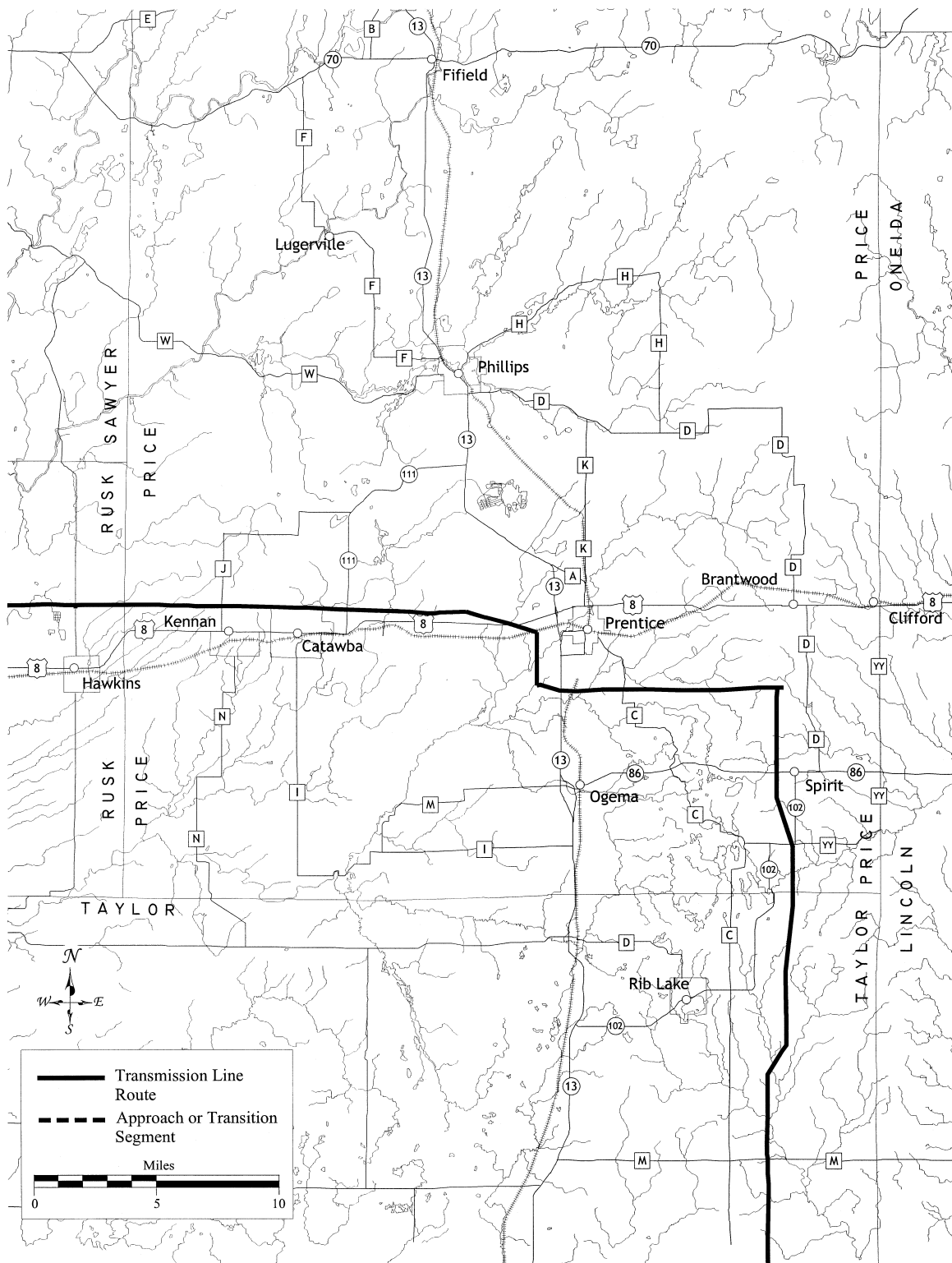
Figure 8-14 Tripoli 4 Route (2 of 4)

Figure 8-15 Tripoli 4 Route (3 of 4)

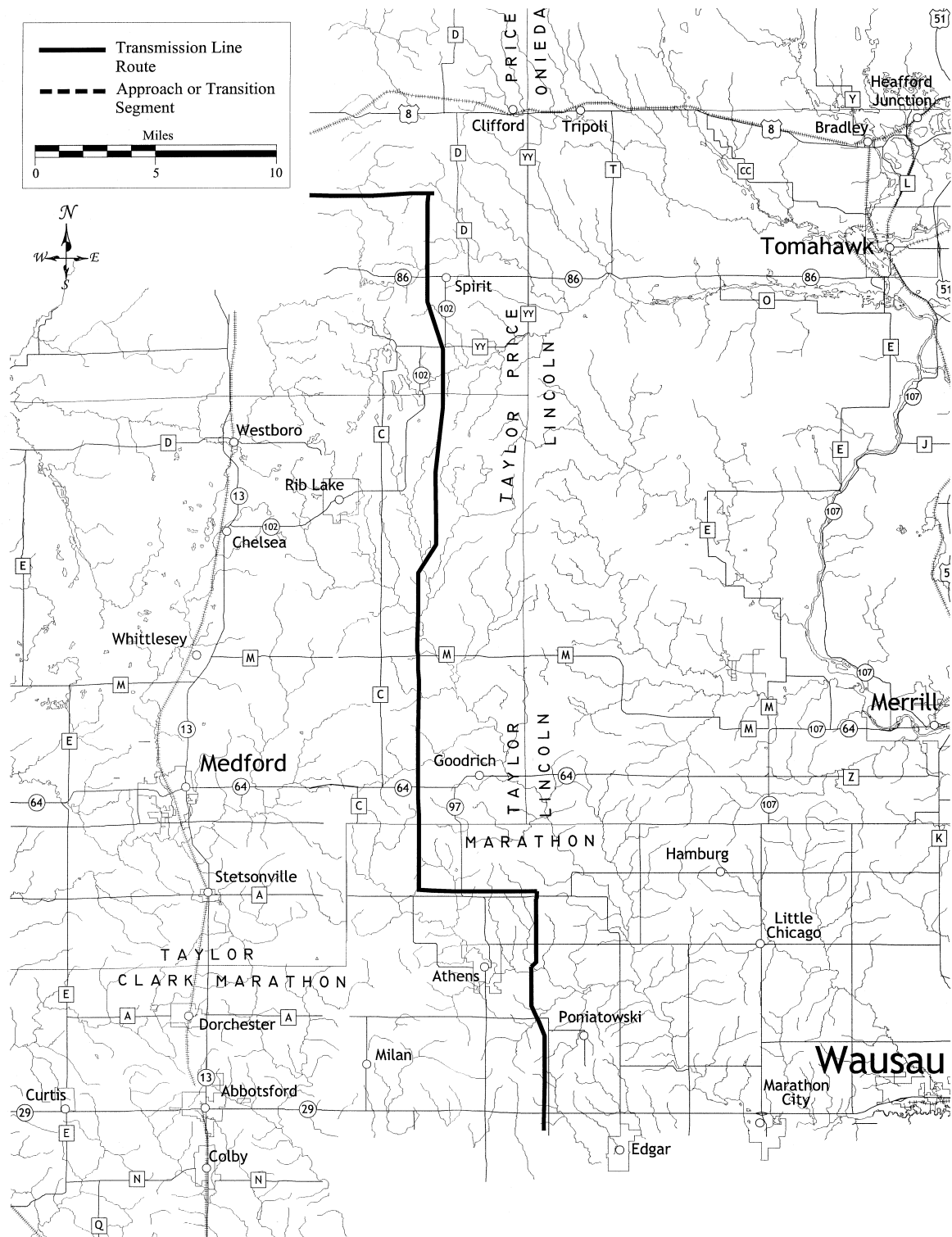
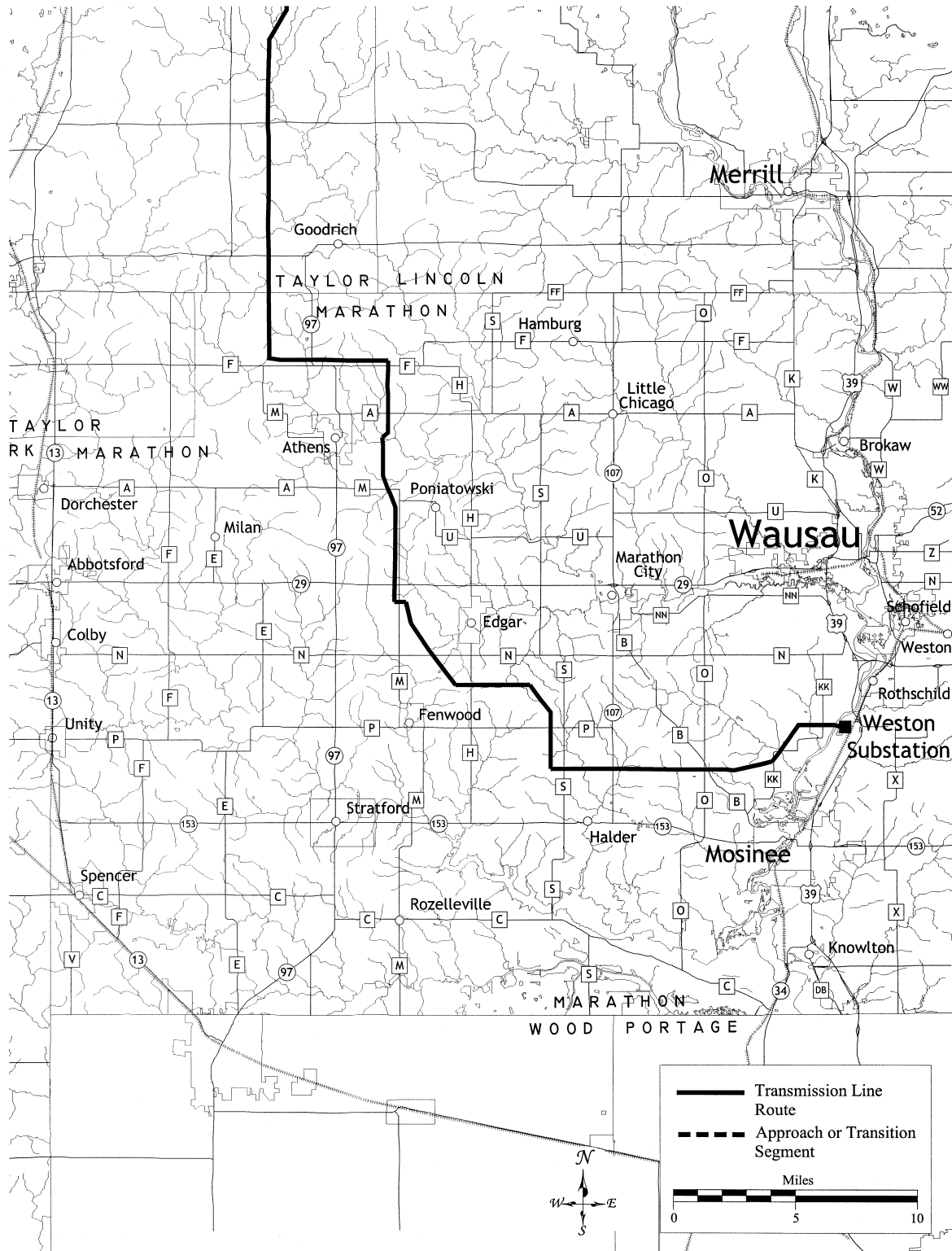


Figure 8-16 Tripoli 4 Route (4 of 4)



Natural resources

Lakes

There are no lakes greater than 20 acres in size within 1,000 feet of the proposed centerline for this route.

Rivers and streams

There are 57 river/stream crossings on the Tripoli 4 Route. Three of the crossings are over waterways that have been designated as either OERW and eight of the crossings are over waterways classified as trout streams by the DNR. Forty-four of the crossings are inaccessible. Many intermittent streams (streams that do not flow year round) would also be crossed by the proposed transmission line, but they are not included in this analysis.

Table 8-16 indicates which streams along the Tripoli 4 Route have been designated as OERW or trout streams. Degradation of trout habitat is a serious management problem for the DNR. Successful natural reproduction of trout depends on upwelling, well-oxygenated groundwater (springs). Stream flow through and over gravel spawning nests must be low in suspended silt and sand or it will smother developing eggs or fry (newly hatched trout). Most trout species like to hide in the shaded undercuts of stream banks. Inappropriate transmission line construction practices could seriously degrade trout streams. Streamside vegetation must be kept intact to prevent erosion, which would break down the stream undercuts and introduce silt and sand to spawning beds. Heavy equipment crossing a trout stream could cause even more damage to the aquatic habitat. In some areas, pools and permanent shade cover are important to trout welfare. A clear-cut ROW would disturb this important habitat element and could decrease local trout populations.

The following section describes specific rivers and streams affected by the Tripoli 4 Route and the potential impacts of constructing the line in these areas.

Chippewa River

The Tripoli 4 Route (segment 303) crosses the Chippewa River about 700 feet north of an existing petroleum pipeline crossing. A farmstead is located along the river, an equal distance north of the proposed crossing. The riverbanks are wooded at this location, resulting in the need to clear a new 120-foot wide ROW corridor. The transmission line would alter the existing visual setting at the crossing. Boaters would be the principal group impacted.

Flambeau River

A canoe portage is located at NSP's Big Falls Dam on the Flambeau River. Two existing electric transmission lines cross the river just south of the dam. The proposed route (segment 144) crosses the river about 800 feet south of the existing transmission line crossings. The riverbank is steeply sloped and wooded at the proposed crossing. ROW clearing and line construction on or near the steep slopes could lead to soil erosion. Maintaining the existing vegetation on the slopes and revegetating the area at the top of the slope could help to minimize potential erosion. This crossing would be visible to canoeists on the Flambeau River traveling south of the dam.

The visual impact could be reduced if the crossing were moved further north to lie directly adjacent to the existing transmission line crossings.

Wisconsin River

Segment 1a crosses the Wisconsin River at an existing WPSC 345 kV line crossing adjacent to the Weston Power Plant. The existing line is on lattice structures at the river crossing. The new and existing lines would be double circuited on new single pole structures. The new structures would be taller than the existing structures and the wires would be more visible than those of the existing line.

Other Outstanding and Exceptional Resource Waters (OERW)

The route crosses Big Weirgor Creek south of Exeland (segment 308), Middle Fork Main Creek in eastern Rusk County (segment 156), and the Big Rib River in eastern Taylor County (segment 29). Each of these streams is an ERW.

Nationwide Rivers Inventory (NRI)

The Tripoli 4 route would cross five river segments listed in the Nationwide Rivers Inventory. They are the Chippewa River (segment 303), the Thornapple River (segment 145b1), the North Fork Jump River (segment 130), the South Fork Jump River (segment 130), and the Wisconsin River (segment 1a). The first four rivers are listed because of their scenic qualities. The Wisconsin River is listed because of its recreational and geologic values. The NRI is discussed in Chapter 3.

Accessibility

Constructing a transmission line across a water body that is not easily accessible from existing roads or ROWs can result in increased environmental damage. For purposes of this analysis, a stream crossing is considered inaccessible when wetlands or other perennial streams in the proposed transmission line ROW prevent direct access to either side of the stream without driving through the stream. The stream crossing is considered accessible if construction traffic can be limited to the proposed ROW and existing roads and no stream or wetland must be crossed. It is assumed that an existing or newly developed transmission line corridor could be used for access by driving construction equipment within the corridor at least until it reaches a river, stream, or wetland. Where there is a road between two streams it is assumed that the equipment could be brought in along the road and then down the transmission line corridor to both stream banks.

Sometimes, however, streams are surrounded by large wetlands or are located in an area with few roads. In that case, there are several possibilities: a temporary or permanent road could be built, a temporary or permanent bridge could be built, the heavy equipment could be allowed to drive through the streambed to the other side, or wetlands could be driven over using protective matting or when they are frozen or dry. The preferred access method will vary depending on the environmental sensitivity of the stream or wetlands, the condition of the stream or wetlands, and the environmental damage that might be caused by disturbing the streambed or wetlands or constructing a bridge or road. For instance, DNR could prefer a new temporary road or a temporary bridge for a trout stream to avoid a motor vehicle crossing because of the very sensitive nature of the stream.

A section in Chapter 5 on water resources has a description of the state (DNR) and federal (COE) laws that protect streams and a general discussion of how the formal permitting process for stream crossings would work. It also describes the additional authority of the Commission to protect water resources. The Commission could order independent monitoring of construction practices at all or some specific stream crossings.

Table 8-16 Rivers and streams on the Tripoli 4 Route (from north to south)

Big Weirgor Creek * τ	Unnamed stream**	Layman Creek **
Buff Creek **	Unnamed stream **	Big Rib River * ** τ
Chippewa River	Unnamed stream	Unnamed stream **
Bear Creek **	Hay Creek **	Joe Martin Creek **
Little Thornapple River **	Hay Creek **	Unnamed stream **
Skunk Creek **	Hay Creek **	Unnamed stream **
Thornapple River **	South Fork Jump River **	Mink Creek τ
Unnamed stream **	Unnamed stream **	Beaver Creek
Crooked Creek	Unnamed stream **	Unnamed stream
Flambeau River	Unnamed stream **	Black Creek
Unnamed stream	Unnamed stream **	Drewek Creek **
Deer Tail Creek **	Douglas Creek **	Burns Creek **
Unnamed stream **	Douglas Creek **	Freeman Creek ** τ
North Fork Main Creek **	Douglas Creek **	Unnamed stream **
Unnamed stream	Unnamed stream **	Hog Creek **
Middle Fork Main Creek * **τ	Unnamed stream **	Unnamed stream **
Shamrock Creek **	Unnamed stream	Fourmile Creek
South Fork Main Creek **	North Fork Spirit River ** τ	Black Creek ** τ
North Fork Jump River **	South Fork Spirit River ** τ	Wisconsin River **

* Designated Outstanding or Exceptional Resource Water.

** Inaccessible – at least one bank of the stream cannot be accessed unless a temporary road is built, a temporary bridge is built across the stream, or heavy equipment is allowed and is able to cross the streambed or another stream or wetland.

τ Classified a trout stream.

Shading – indicates a new transmission line crossing, e.g. there is no existing transmission line at the proposed corridor crossing. In some cases, there is an existing pipeline or rail corridor parallel to the proposed crossing. Crossings here will have the greatest visual impact since there is no overhead structure present.

Wetlands

Construction of the transmission line has the potential to damage the wetlands crossed by the line. Construction equipment traveling along the ROW could create ruts in wetlands, disrupting the hydrology and mixing soil horizons. Use of a single pole structure design for the line could increase the risk of rutting because of the heavier equipment required to transport the more massive structures and bring in concrete needed for footings. Also, invasive non-native species, such as purple loosestrife, could be introduced by equipment operating in wetlands.

Frozen wetlands are better able to resist rutting, but many wetlands either do not freeze during the winter or go through one or more freeze/thaw cycles. Winter thaws occur at unpredictable times and heavy snow cover, the presence of springs, or decaying vegetation can also prevent wetland soil from freezing at all. Likewise, wetlands that are dry at certain times of the year are

more resistant to rutting, but these dry periods cannot be precisely predicted, as soil moisture levels can change from day to day, depending on rainfall and soil type.

The use of timber construction mats could minimize the risk of wetland rutting by distributing the weight of construction equipment over a larger area. In many cases, the judicious placement of transmission structures would allow smaller wetlands to be spanned, eliminating the need for construction equipment to enter these wetlands. The span length for the proposed line design is 800 to 1,000 feet, thus many wetlands less than 800 feet in width could likely be spanned. For 115 kV construction, the maximum spannable distance is 800 feet. Wetlands wider than these distances would necessarily require the placement of structures in these wetlands. The excavation and heavy equipment required to pour footings and erect the structures would increase the probability of wetland damage. Angle structures in wetlands would increase the potential for damage due to the larger footings or guying required.

Even though some wetlands could be spanned, it may still be necessary, due to access limitations, for construction equipment to drive through these wetlands. This would be the case when a series of wetlands lies within the transmission line ROW between road access points. Rivers and streams can also limit access to areas along the ROW. In such instances, it would be necessary for equipment to drive through one or more wetland, unless a new access route to the ROW is developed. In some locations, driving through wetlands can be avoided by accessing the ROW through farm fields, although farmland impacts could result. In other instances, alternative access to the ROW could require clearing brush or timber for distances of a mile or more, rendering such access impractical. Crossing wetlands over 1,000 feet in width would necessarily require driving equipment through the wetland or on mats laid over the wetland, due to the need to place one or more structures in the wetland.

Fewer new wetland impacts may occur along portions of the route that follow existing facilities such as roads, railroads, pipelines, and electric transmission lines than on segments that do not share a corridor of any kind.

The Tripoli 4 route would cross numerous wetlands as it passes from Exeland to Weston. The majority of wetlands falls in the forested or shrub/scrub categories. The emergent type wetland, which constitutes most of the remainder of the wetlands, is more likely to be wet at any given time than forested or shrub/scrub wetlands, and is therefore more susceptible to damage from construction traffic.

Inaccessible wetlands

Approximately 30 wetlands are greater than 1,000 feet wide at the point where the Tripoli 4 Route crosses them and could require one or more structures to be placed within them.²²⁵ Also, the low road density and the high concentration of wetlands and streams along portions of this route would result in the need to drive construction equipment through many wetlands as the

²²⁵ A count of wetlands greater than 1,000 feet in width as an indicator of the number of wetlands that could contain transmission line structures represents a “best cases scenario.”

line is being built, especially in areas where a series of wetlands lies between possible road access points. Up to 171 wetlands on the Tripoli 4 Route would be at risk of being driven through by construction equipment.

In general, wetlands are larger, more frequent, and less accessible between Exeland and the proposed Tripoli Substation sites than between Tripoli and Weston. Some segments along the route pass through extensive areas of wetlands that are relatively inaccessible by road. Segments 156 and 130, which follow an existing NSP transmission line ROW north of USH 8 between Ingram and Prentice, pass through large wetlands associated with several forks of Main Creek and Stony Creek. The potential for substantial adverse impacts is somewhat dependent on the degree of prior disturbance caused by the construction and maintenance of the existing transmission line. The potential for wetland impacts due to large difficult-to-access areas also exists along segment 122 that runs east from STH 13 south of Prentice. The relatively high road density in Marathon County provides improved ROW access opportunities, reducing the probability of wetlands impacts. Between the Flambeau River and Prentice, the route follows the ROW of an existing 115 kV transmission line. The wetland impacts along this portion of the route would be incremental in nature as the existing transmission line has likely caused some degradation of wetlands along its ROW.

Sensitive wetland areas

While accessibility and length of wetland crossings can be important factors in assessing the potential for wetland impacts, certain wetland types also appear to be more susceptible to long-term damage from power line construction. Based on several research studies, bog communities, both tamarack/spruce bogs and those supporting ericaceous shrubs (i.e. leatherleaf, Labrador tea, etc.) appear to take longer to recover than other types of wetlands containing emergent vegetation.

The Tripoli 4 Route has a 700-foot crossing of a tamarack/spruce bog on segment 144 in Rusk County, near the Flambeau River.

The Tripoli 4 Route passes through two ericaceous bogs for a total crossing distance of 1,300 feet. These bogs are located on segments 130 and 310, which have existing transmission lines.

High quality wetlands

Seven wetland (forested and non-forested) areas on the Tripoli 4 Route are associated with OERW or trout streams.

- Scrub/shrub wetlands associated with Middle Fork Main Creek, an ERW and trout stream (segment 156, existing transmission line corridor).
- Forested wetlands associated with the North Fork Spirit River, a trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with the South Fork Spirit River, a trout stream (segment 29, new corridor).

- Scrub/shrub wetlands associated with the Big Rib River, an ERW and trout stream (segment 29, new corridor).
- Scrub/shrub wetlands associated with Mink Creek, a trout stream (segment 29, new corridor).
- Forested wetlands associated with Freeman Creek, a trout stream (segment 11, new corridor).
- A large wetlands complex in the Nine Mile Forest associated with Black Creek, a trout stream (segment 1a, existing transmission line corridor).

Table 8-17 Wetland area affected by the Tripoli 4 Route

Length of Forested Wetland Crossed (miles)	Length of Non-Forested Wetland Crossed (miles)	Total Length of Wetland Crossed (miles)	Total Area of Wetland Affected (acres)
11.3	12.0	23.3	389

Forests

The Tripoli 4 Route is heavily wooded in Rusk, Price, Taylor, and parts of Marathon County. Large areas of farmland are more common in Marathon County. The proposed transmission line would fragment many large woodland blocks providing forest interior habitat. The specific areas where fragmentation may be a problem are described below.

Upland forests found along the route can be classified into five basic types: northern hardwood, aspen, conifer, mixed hardwood/conifer, and pine plantation. Forested wetlands are considered a sixth category in this analysis. Impacts to forests can be considered at two levels: in some areas, a new 120 to 150-foot wide ROW would be opened through the forest; and in other areas, incremental widening (usually 20 feet) would be needed where the route follows an existing corridor.

This route would require a new 120- to 150-foot-wide ROW through 49.9 miles of forest. This new ROW plus the incremental widening along existing ROWs would require a total of 846 acres of ROW clearing in upland forest and 142 acres of forested wetland clearing. The existing facility corridors that would be overlapped by the transmission line ROW contain only 211 acres of cleared upland forest and 46 acres of cleared forested wetland.

ROW clearing in forested areas would consist of removing all tall-growing trees from the proposed ROW. Wood from the cut trees would be hauled off the ROW, stacked at the landowner's request, or burned on-site. Low-growing shrubs and bushes that would not be expected to interfere with the transmission line may be removed, trimmed, or allowed to remain, depending on their density and growth characteristics.

In addition to fragmentation of large forest blocks, some potential impacts due to forest clearing throughout the project area include degradation of woodland quality due to encroachment of

weedy plant species, soil erosion on steep slopes, loss of some wildlife habitat, and introduction or accelerated spread of oak wilt disease.

Oak wilt is a fungal disease that has a high mortality rate, often resulting in death within one year of initial infection. Tree species in the red oak family (red oak, black oak, and northern pin oak) are highly susceptible to oak wilt. Spread of this disease to healthy trees is possible by wounding, pruning, or removing trees during construction or maintenance, especially during spring or early summer when the insects and fungi associated with this disease are most active. (See Chapter 5 for more detail about oak wilt.)

The Tripoli 4 Route crosses at least one sugarbush. A transmission line ROW cutting through a sugarbush would reduce the grove's production of maple sap. Impacts to sugarbushes are described in more detail in Chapter 5.

Table 8-18 Forest impacts for the Tripoli 4 Route

	Double Circuit
Total new forest crossed (miles)*	49.9
Upland forest cleared (acres)	846
Wetland forest cleared (acres)	142
Total forest cleared (acres)	988

* No corridor currently exists of any kind.

Forest fragmentation

The Tripoli 4 route would fragment 13 forest blocks larger than 1,000 acres. Between Exeland and the proposed Tripoli Substation site, these forest blocks consist of stands of aspen, mixed hardwoods, and maple. Aspen is the most common forest type in this area. Six large forest blocks are in this area. Between the Tripoli site and northern Marathon County, these same forest types are found, but mixed hardwood stands are predominant. Five large forest blocks are fragmented in this area, but some of these blocks are very large. The route would fragment two forest blocks larger than 1,000 acres in Marathon County. One block is in a planned expansion area for the Burma Road Unit of the Marathon County Forest (segment 11). The other is near the Nine Mile Unit of the Marathon County Forest.

Further analysis of forest fragmentation potential was done using a forest block size of 200 to 1,000 acres with forest/forested wetland cover of at least 70 percent. As expected, the fragmentation potential from the creation of new corridor greatly increases when one identifies smaller forest blocks. At least 21 blocks of this size have been delineated on this route.²²⁶ While forest blocks greater than 1,000 acres in size provide essential habitat for rarer species that require deep forest interior, smaller blocks, such as those 200-400 acres in size, are also large enough to function as nesting, denning, and breeding sites for many wildlife species.

²²⁶ These blocks are mutually exclusive of the 1,000 acre+ blocks and thus have not been double counted for this analysis.

Seventeen of these blocks would be fragmented by the creation of a new corridor. In the other four blocks the proposed transmission line would require expansion of an existing infrastructure corridor that is already fragmenting these forest blocks.

Industrial forests

The Tripoli 4 Route could pass through up to 6.75 miles of forest owned by forest products industries (industrial forest). Most (5.5 miles) of this industrial forest is located in Rusk and Price Counties with lesser amounts impacted in Marathon and Taylor Counties. In Price County, most of this industrial forest is located along an existing transmission line ROW.

County and state forest lands

Rusk County Forest

A portion of segments 153a and 153b borders the south edge of 0.75 mile of the Rusk County Forest. A 1.5-mile section of segments 153a and 139b crosses the County Forest. Both these sections follow an existing electric transmission line located north of Glen Flora. A 2.0-mile portion of segment 156 lies on the south edge of the Rusk County Forest located northwest of Hawkins, following an existing electric transmission line.

Price County Forest

Segment 130 lies just inside the southern boundary of 2.2 miles of the Price County Forest located north of USH 8, between Catawba and Prentice. The route follows an existing electric transmission line at this location.

Taylor County Forest

A 0.5 mile portion of segment 29 borders the west edge of the Taylor County Forest, which is located east of Spirit Lake. As segment 29 continues south, it crosses 1.1 miles of Taylor County forestland southeast of Spirit Lake.

Marathon County Forest

The route passes about a 0.25 mile north of the Burma Road Unit of the Marathon County Forest. About 0.75 mile of segment 11 lies within the potential purchase zone for expansion of this county forest unit.

Near the Weston Substation, the route crosses the Nine Mile Forest. This Marathon County Forest unit gets heavy recreational use from cyclists, hikers, and cross-country skiers. Several local running and mountain bike races are held in the forest as well as several events of the Badger State Winter Games. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. The route would avoid most trails in the forest. About 1.6 miles of the route cross county forestland. For two-thirds of this length, the new line would be double circuited with the existing WPSC 345 kV line.

Wildlife

The proposed transmission line can impact wildlife through construction activities, permanent habitat alteration, and physical hazards. Construction activity can be noisy and could crush nests and vegetation that provides food and cover in the ROW. Construction equipment driving through a stream can disturb the streambed and cause downstream siltation, degrading aquatic

habitats. ROW clearance and line construction near lakes, rivers, and streams can lead to soil erosion and siltation in the water body. Transmission line corridors can fragment habitat by converting woodland to shrub and grass land, or degrade habitat through the introduction of exotic invasive plant species. Chemicals used in controlling ROW vegetation near water bodies can drift or run off, polluting the water. Transmission line conductors and structures pose a physical hazard to birds flying near the transmission line. Some potential impacts specific to the Tripoli 4 Route are described below.

The Tripoli 4 Route crosses the Chippewa and Flambeau Rivers, which support several threatened and endangered species of mussels and dragonflies. Impacts to these species could be avoided if construction equipment stays out of the rivers and if proper erosion control measures are implemented.

Bird strikes are also a concern where the line would span major rivers like the Chippewa, Flambeau, and Wisconsin Rivers. Bald eagles are known to use these areas. Major rivers also can serve as corridors for daily and migratory flights by numerous bird species.

Placing markers on the wires of the transmission line in well-known flyways, removing the shield wire, or using an H-frame structure to place all the conductors in a horizontal position (rather than a vertically stacked arrangement) could reduce the probability of birds colliding with the line.

The wood turtle (*Clemmys insculpta*), a threatened species, has been found along the route (segment 1). Construction activities could present a threat to turtle nests. Impacts to the turtle can be minimized by avoiding construction within areas inhabited by the turtle during the egg laying and hatching time of June to late September.

Table 8-19 is a list of federal or state listed threatened or endangered species that are on record as having been sighted in the project area. The exact location is not given in order to protect against intentional removal or destruction of the plants or animals. As noted above more surveys for aquatic threatened or endangered species may be undertaken by DNR as part of any permit review.

Table 8-19 Threatened and endangered species for the Tripoli 4 Route

Scientific Name	Common Name	State Status
<i>Clemmys insculpta</i>	Wood turtle	THR
<i>Cyclonaias tuberculata</i>	Purple wartyback mussel	END
<i>Plethobasus cyphus</i>	Bullhead mussel	END
<i>Ophiogomphus bowni</i>	Pygmy snaketail dragonfly	THR
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC (federally END)
<i>Canis lupis</i>	Timber wolf	THR (federally END)

The following protection categories are designated by the DNR: END=endangered, THR=threatened, SC=special concern species. The species designated SC/M are fully protected by federal and state laws under the Migratory Bird Act. For a more thorough description of threatened and endangered species protection see Chapter 5.

Local community impacts

Land use

The most common land use zoning designation along the proposed route is agricultural or conservancy. The most notable exception is an area of planned residential development in the town of Mosinee, south of the Nine Mile Forest. In this area the transmission line could inhibit future residential development or constrain the layout of residential lots. Utilities are typically a permitted use in agricultural and conservancy zones. A new transmission line would not prevent the continued or future agricultural use of the land it crosses, but may adversely affect some aspects of farm operation. Conservancy areas could likewise continue as low-intensity use lands (often maintained in a natural state), but wooded land would be noticeably altered in appearance and function by transmission line ROW clearance.

A total of 4.2 miles of the route pass through areas zoned for residential use. About 2.5 miles of this lie along existing transmission line corridors. The majority of the residentially zoned land is near the southern end of the route, in the towns of Mosinee and Rib Mountain, Marathon County. The other residentially zoned area is a 0.7 mile section of the route east of Catawba in Price County. The only part of the route in a commercial/industrial zone is the Weston Power Plant site. Conservancy/recreational zoning is more prevalent along this route, with 1.6 miles so designated. By far the most common zoning designation is agricultural, with 68.5 miles of the route crossing through land zoned for agricultural use.

The proposed transmission line could discourage the siting of new homes within close proximity to the line. Depending on the placement of the line within the boundaries of a given parcel, the line could effectively preclude the building of a home on a smaller parcel if the owner prefers to keep the home several hundred feet from the transmission line or the edges of the property.

Public lands

The following publicly owned lands would be crossed or bordered by each route segment noted. The governmental owner of each property must voluntarily agree to grant an easement if the

transmission line is to cross the parcel. County forestlands are discussed in more detail under the Forest Impacts section of this chapter. Trails are discussed under the Visual Impacts section of this chapter.

• DNR	Segment 303
• Rusk County Forest	Segments 153b, 153a
• Rusk County Forest	Segments 153a, 139b
• Rusk County Forest	Segment 156
• Pine Line Trail	Segment 122
• Price County	Segment 112
• Taylor County Forest (Ice Age Trail)	Segment 29
• Town of Mosinee	Segment 11
• Marathon High School	Segment 11
• Marathon County Forest	Segments 8b, 8a, 1b, 1a
• Rib Mountain Metro Sewage District	Segment 1a

Agriculture

The route crosses a total of 41.5 miles of agricultural land (31 percent of the total length of the route). Agricultural activity along the route is most concentrated in Marathon County. Although the project would primarily affect dairy operations in Marathon County, it would also affect some ginseng operations. Little farmland is found on the route in eastern Price County. In Rusk, Price, and Taylor Counties most farming operations revolve around beef cattle, dairy cows, and Christmas tree farms.

The construction and maintenance of high-voltage transmission lines across or adjacent to agricultural fields can affect farm operations in numerous ways. Many of these impacts, if not mitigated or compensated, could increase farming costs. Heavy equipment used in the construction and maintenance of a transmission line can compact soils. Transmission structures in cropland pose an obstacle to farm equipment and can result in lower crop yields. A transmission line can also limit options for the future development of farmland. These and other impacts are discussed in more detail in Chapter 5. The DATCP has prepared an AIS on the proposed project. The executive summary of the AIS is attached as Appendix A to this document.

Visual

Visual impacts would occur over the full length of the Tripoli 4 Route. These visual impacts are related to the amount of ROW needed and the presence of the new structures, although the incremental visual impact would vary depending on whether any facilities (power lines, pipelines,

railroads, or roads) currently exist at various points along the route. The added visual impact would vary from no additional ROW required for poles that are 40 feet taller, to 120 to 150 feet of new ROW for 85- to 130-foot structures where no facilities currently exist.

The greatest visual impact along the Tripoli 4 Route would be in those areas that do not have existing facility corridors. About 69 percent of the length of the route, 91.5 miles, does not follow an existing corridor and would require the acquisition of 120 to 150 feet of new ROW where none currently exists. Most of this lies between Prentice and Weston.

An increased level of visual impact would occur on the portions of the Tripoli 4 Route that are proposed to be located where there is currently only an underground pipeline. Although there is an established cleared ROW, no above-ground or vertical facilities are present. Because the pipeline companies will not allow transmission line structures on or overhanging the existing pipeline ROW, it would be necessary to widen the cleared corridor by 108 to 132 feet. The new, wider corridor would also contain a very visible transmission line. About two percent, or 2.9 miles, of the proposed Tripoli 4 Route is located in a corridor with only an existing underground pipeline. This portion of the route is located south of Exeland, on either side of the Chippewa River.

The remaining 29 percent, about 37.8 miles, of the Tripoli 4 Route would be located along existing electric transmission lines. About 3.6 miles of the new line would be double circuited with an existing WPSC 345 kV line near Weston. This existing line is on H-frame structures 85 to 95 feet tall. These structures would be replaced by single pole double circuit structures that would be 125 to 135 feet tall. The new 345 kV line would also be double circuited with a 30.5-mile length of NSP 115 kV line between the Big Falls Dam on the Flambeau River and Prentice. This section of the route would require a 20-foot expansion of the ROW. About ten miles of this existing line also parallel roads. The present structures for the 115 kV line are 50 to 55 feet tall. New double circuit poles would be 125 to 135 feet tall, with corner structures as tall as 160 feet. About a mile of 69 kV line would be double- circuited southwest of Prentice, requiring 20 feet of additional ROW. The existing 69 kV H-frame structures are 35 to 45 feet tall. The new double circuit poles would be 125 to 135 feet tall. Finally, a 2.6-mile section of NSP 69 kV line would be double circuited southwest of Exeland, requiring a 20-foot ROW expansion. This last section of line would not be needed if the Oliver sector route follows the Lakehead petroleum pipeline near Exeland.

Other factors that would affect the visibility of the line include topography and land cover. The proposed line would be more visible where it passes over hills, but hills can also serve to screen the line from view at certain locations. In forested areas the new power line may be visible for shorter distances than it would be in open, farmland areas, due to the screening provided by the trees. Where the line is visible in forested areas, the impact would be more pronounced due to the ROW clearing required. Although the line could be seen over long distances in open farmland, its visual impact may be less because of other existing man-made structures. Most of the route is heavily forested, except for a portion in Marathon County, where farming predominates. In general, the southern end of the route in Marathon County is more densely populated than the rest of the route.

Special areas

Visual impacts of the project may be most pronounced at river crossings. Boaters, canoeists, anglers, and other river users frequent these areas. Impacts are more serious when the transmission line crosses rivers at scenic locations. The Tripoli 4 Route crosses the Chippewa and Flambeau Rivers. Further details concerning these crossings can be found under the Rivers and Streams section of this chapter.

The Pine Line Recreation Trail follows an abandoned railroad ROW between Prentice and Medford. Segment 122 crosses this bicycle trail south of Prentice. The area where the trail would be crossed is partially wooded.

The Knox Creek Heritage Center is developing a 5-mile loop nature and historic trail just east of West Knox Road in eastern Price County. The trail would be crossed by segment 110 as it enters Substation Site 8. The trail is next to West Knox Road at this point. Timm's Hill is the highest point (1951.5 feet above sea level) in Wisconsin and is the location of a Price County park. An observation tower is located atop the hill. The route passes about three miles north of the hill as it heads east and west, and about three miles east of the hill as the route travels north and south. At this distance the transmission line would not be highly visible to viewers on the observation tower. Hills and forest would also partially screen the line from view.

A certified segment of the Ice Age NST is crossed by segment 29 in the Taylor County Forest. The power line would be roughly perpendicular to the trail. The trail at this location is in a near-wilderness setting. The transmission line would drastically alter this setting.

The Nine Mile Forest gets heavy recreational use from cyclists, hikers, and cross-country skiers. Some of the Badger State Winter Games are held in the forest. Trail crossings by the power line would diminish the visual appeal of the forest to recreational users. Visual impacts would be less serious because the new line would be double circuited with the existing 345 kV line.

Proximity of residences to centerline

Because of public concerns about safety, EMF, stray voltage, induced currents, aesthetics, and property values, the number of structures within 300 feet of the proposed centerline is provided in the table below. All of these issues are described in greater detail in Chapter 5.

The summary in Chapter 12 compares the number of facilities within 300 feet of the proposed centerline on the Tripoli 4 Route to the number on other Tripoli routes.

Table 8-20 **Number of facilities within 300 feet of the Tripoli 4 Route**

Facility Type*	Double Circuit
Homes 0-50 feet	0
Homes 50-100 feet	12
Homes 100-150 feet	14
Homes 150-300 feet	39
Total Homes	65
Commercial/industrial/office 0-50 feet	0
Commercial/industrial/office 50-100 feet	0
Commercial/industrial/office 100-150 feet	0
Commercial/industrial/office 150-300 feet	0
Total Commercial/Industrial/Office	0
Agricultural outbuilding 0-50 feet	1
Agricultural outbuilding 50-100 feet	5
Agricultural outbuilding 100-150 feet	3
Agricultural outbuilding 150-300 feet	24
Total Agricultural/Outbuildings	33
Total Facilities	98

*There are no apartments, day care centers, hospitals, nursing homes, parks, or playgrounds within 300 feet of this route.

Historical and archeological sites

Records of the SHSW indicate that an archeological site is present along the proposed ROW. It is an archaic campsite or village near the Flambeau River (segment 144). The SHSW would require the site to be field surveyed by a qualified archeologist if the project is approved and if the Tripoli 4 Route is approved. The applicants have agreed to survey the route where the soil would be disturbed at transmission structure locations. If the archeologist finds artifacts, the applicants would relocate the structure, after consulting with the SHSW, to avoid any further disturbance by construction.

Substation sites

If the Tripoli 4 Route were selected, the proposed Tripoli Substation would be constructed in an area of low population density in eastern Price County where the proposed power line turns from its east-west course and heads south. The substation sites lie in an area of mixed forest, scrubland, and scattered farm fields along West Knox Road. Site 9 is surrounded by woodland. Site 8 is located at the north edge of some pastureland, but woodland is located on all other sides of the site. Site 8 may be visible from one to three homes south of the site, depending on the exact layout of the substation at the site. Of the ten acres to be acquired for the site, only 2.5 acres would be fenced and would enclose the substation equipment. Vegetation on the remainder of the site would be left undisturbed to allow thick growth to provide screening for the substation. Motorists on the lightly traveled nearby roads, as well as hikers on the Knox Creek Heritage Trail, may see the substations. The substation would be a substantial change to

the visual environment of the proposed sites, but Site 9 would probably be screened from view by surrounding trees.

The new 345 kV substation at the southern terminus of the transmission line would be built on the Weston Power Plant site. The substation would fit in with the industrial setting at the Weston site.

Unused segments

Segment 7b

This segment, when used in combination with segment 14a, provides an alternative to segment 49. Using segments 7b and 14a would move the route further from the Nine Mile Forest, but the route would still lie within an expansion zone for the forest. The 1,000-foot segment follows a petroleum pipeline on the north side of Spring Brook Road and lies entirely within a wooded wetland.

Segment 12

This segment, when used in combination with segments 14a and 8b, provides an alternative to using segments 49 and 7a on the Tripoli 1 Route. A combination of segments 14a, 12, 8b, 8a, and 1b can substitute for segment 48 on the Tripoli 3 Route. This substitution would allow these routes to skirt the southern end of the Nine Mile Forest, but would lengthen the routes. Much of this segment is forested, and it crosses some wetland.

Segment 14a

This segment, when used along with segments 12 and 8b, provides an alternative to using segments 49 and 7a on the Tripoli 1 Route. A combination of segments 14a, 12, 8b, 8a, and 1b can substitute for segment 48 on the Tripoli 3 Route. This substitution would allow these routes to skirt the southern end of the Nine Mile Forest, but would lengthen the routes. Segments 14a and 7b can also substitute for segment 49. Using this segment instead of segment 49 moves the route closer to the outside edge of the planned forest expansion. The segment is almost entirely forested, with about a quarter of it being forested wetland.

Segment 17

This 0.25 mile segment connects segments 20 and 16 and would be used if the Tripoli 1 Route were modified to use segment 11 to skirt the southern end of the Nine Mile Forest instead of segment 14. Segment 14 would seriously impact Fourmile Creek. Segment 17 crosses farmland and wetland.

Segment 26

This four-mile segment lies near the Big Rib River, northeast of Athens. It could substitute for segment 25 in the Tripoli 1 Route. This substitution would shorten the route but it would increase the impact on the forest and wetlands adjacent to the Big Rib River. The segment is almost entirely wooded.

Segment 28

This segment connects segments 34 and 24. It could be used to modify the Tripoli 1 Route to pass west of Edgar. Segment 28 crosses the Big Rib River in southern Lincoln County, about 0.25 mile east of the Taylor County line and 1.5 miles north of the Marathon County line. Just west of the crossing the river flows through a scenic cascade area. The Lincoln County Recreation Plan has identified this area along the river as a potential county park site, or a joint Taylor County/Lincoln County park. On the south bank of the river at the crossing location is a stand of very large white pine. Cutting this stand of pines and erecting a power line would diminish the beauty of this site, which could possibly become a future county park. Segment 28 is mostly wooded.

Segment 47

This 0.5 mile segment provides a connection between segments 111 and 29. Lying west of West Knox Road in Price County, the segment extends north through woodland and wetland from proposed Tripoli Substation Site 8 to Site 9.

Segment 108a

This 1,000-foot segment provides a connection between segments 108b and 38 at the Price-Lincoln County line. This segment is located at the proposed Tripoli Substation Site 2.

Segment 117

This 0.75-mile segment provides a connection between segments 119 and 112 in eastern Price County, allowing a crossover between parallel routes. It passes through forest and wetlands.

Segment 121

This one-mile long segment provides a connection between segments 123 and 118, southeast of Prentice, allowing a crossover between parallel routes. It passes through forest and wetlands.

Segment 137

This segment, when used with segment 142, provides an alternative connection between segments 144 and 126. It proceeds due west 5.2 miles from the western end of segment 126, ending at the existing NSP 115 kV Osprey to Sheldon Pump line east of the Flambeau River. Using this segment would reduce the length of route that would share an existing transmission line corridor. The majority of the segment is forested, with some farmland and wetlands. The segment crosses Josie Creek, a trout stream.

Segment 141

This 1.4-mile segment provides a connection between segments 155a and 135. It would be used if the northernmost crossing of the Flambeau River (segment 155b) were used along with the rest of the Tripoli 1 Route. The segment is primarily forested.

Segment 145b2

This one mile segment could be substituted for segment 145b3 on the Tripoli 1 and 3 routes located north of Ladysmith. Doing so would move the route closer to an occasionally used grass airstrip. Using this segment would shorten the route by 0.3 mile, but increase the amount of wetlands crossed. The segment is mostly forested.

Segment 157

This 2.2-mile segment provides a connection between segments 155b and 153a. Using it would lengthen the Tripoli 2 Route and increase, by two miles, the length of the route that shares a corridor with the NSP 115 kV Osprey to Prentice line. The segment lies entirely within the Rusk County Forest and bisects a large forest block.